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DILATATION OF THE URETER AND RENAL PELVIS *

W. F. BRAASCH, M.D.

ROCHESTER, MINN.

Dilatation of the ureter and renal pelvis may be caused by these etiologic factors: mechanical obstruction, infection, and disturbance of innervation. The various types may be recognized by differences in (1) outline, as observed in the pyelo-ureterogram, (2) pathology, and (3) clinical data.

MECHANICAL OBSTRUCTION

Continued mechanical obstruction in any portion of the urinary tract is necessarily followed by dilatation of the portion above it. It may be conceivable that an occasional obstruction may cause urinary retention of such short duration that no dilatation in the ureter or pelvis would be apparent; but in the presence of a more or less permanent obstruction causing urinary retention, it would be impossible not to have a visible permanent distention of the ureter and the renal pelvis.

Pelvis.—Dilatation in the pelvis caused by mechanical obstruction is usually characterized by (1) predominance of dilatation in the plevis rather than in the calices or ureter, and (2) comparative regularity of pelvic outline.

The various changes in the pelvic outline resulting from mechanical obstruction are best described by considering them according to degree. As demonstrated by the pyelogram, the following deviations from the normal pelvic outline may be noted:

1. Early hydronephrosis: (*a*) flattening of terminal irregularities; (*b*) broadening of the base of the calix; (*c*) increase in size of the true pelvis, and (*d*) shortening of papillae.

2. Moderate hydronephrosis: (*a*) broadening of the entire calix; (*b*) shortening of papillae; (*c*) change in the angle of insertion of the ureter; (*d*) increase in size of the pelvis, and (*e*) changes of secondary infection.

3. Large hydronephrosis: (*a*) partially filled calices; (*b*) rounded individual areas; (*c*) single calices; (*d*) diffuse outline of rounded sac, and (*e*) dim areas suggestive of diluted opaque fluid.

Early Hydronephrosis.—Probably the first deviation from the normal to be noted in the pyelogram with early hydronephrosis is a flattening of the terminal irregularities of the normal minor calices, together with a slight broadening of the major calix. Immediately following or accompanying these changes may be noted an increase in the size of the true pelvis. With the increase in the size of the pelvis, a shortening or flattening of the papillae projecting between the major calices may be noted.

Moderate Hydronephrosis.—With further increase in size of the hydronephrosis, the major calix becomes considerably broader in its entire extent, as well as shorter, while the terminal irregularities will usually have been effaced. The abbreviation of the calix may proceed to such an extent that one or two irregular indentations in the otherwise rounded contour of the true pelvis may alone remain. Accompanying these changes in the outline of the calix, a marked increase in the size of the true pelvis will usually occur. The pelvic outline is usually even and well rounded along its free border; this is typical of mechanical distention. Its size now makes it easily distinguishable from a large, normal pelvis. This increase in size of the true pelvis may be out of proportion to the more moderate changes seen in the calices. With the increase in size of the true pelvis, the papillae which normally project between the major calices well into the pelvic lumen, become distinctly shorter and may become so flattened as practically to be effaced.

Large Hydronephrosis.—It will usually be difficult to demonstrate the entire contour of a greatly distended pelvis in the pyelogram because of the dilution of the injected medium by the retained fluid. The pelvis is now a large round sac, with rounded calices extending from it. The calices alone may be visible and appear as detached, irregularly rounded areas, particularly when partially filled.

The Ureter.—Dilatation of the ureter because of mechanical obstruction is characterized by an increase in the size of the lumen and by thinning of the ureteral wall. The degree of dilatation is greatest near the point of obstruction, and diminishes gradually as it nears the pelvis. This is in marked distinction to the inflammatory dilatation, which is often greatest at the ureteropelvic juncture and smaller in its lower portion. The degree of dilatation accompanying mechanical obstruction is usually greater than that resulting from infection.

A stricture of the ureter may occur which obstructs the ureteral lumen only temporarily,[1] and it is possible that the ordinary method of cystoscopic examination may fail to disclose the presence of such a stricture, when examined during the interval of patency. A ureterogram may be of considerable value in such cases and may be the only method by which the condition

* From the Department of Urology, Mayo Clinic.

* Chairman's Address, read before the Section on Urology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Braasch, W. F.: Pyelography, Philadelphia, W. B. Saunders Company, 1915, p. 323.

can be demonstrated. Further, even though the existence of a stricture is ascertained by means of the ureteral catheter alone, its extent and the degree of dilatation above it can frequently be ascertained more accurately by means of the pyelo-ureterogram. When encountering an obstruction to the ureteral catheter, considerable difficulty may arise in differentiating between an anatomic and a pathologic condition. The catheter may meet an obstruction at any level of the ureter, as the result of some anatomic condition, such as acute angulation in the course of the ureter, marked

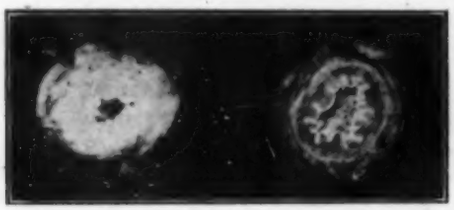

Fig. 1 (244137).—Gross section of ureter with chronic ureteritis. Note thickening of wall and dilatation of lumen.

elasticity of the ureteral wall, or a loose mesenteric attachment. With most anatomic obstructions, an injected fluid will pass any obstruction offered to the ureteral catheter, and the absence of dilatation or any evidence of abnormality will demonstrate the anatomic nature of the obstruction. With a pathologic obstruction, when the fluid gets by, a nodular dilatation about the obstruction or a diffuse dilatation of the ureter is visible.

INFLAMMATORY DILATATION

Any considerable degree of chronic infection involving the renal pelvis and ureter will be followed by dilatation. This dilatation is not caused by a mechanical obstruction, but is the result of either a change in the tissues, and a consequent retraction in the walls of the pelvis and ureter, or of necrosis. The dilatation may vary from scarcely recognizable irregularity of the calices or dilatation of the ureter to complete destruction of the pelvis.

The Pelvis.—Dilatation of the renal pelvis as the result of inflammatory changes in its walls differs from mechanical dilatation largely in these characteristics: (1) predominance of dilatation in the calices or ureter rather than in the true pelvis, and (2) comparative irregularity of outline. It will be found that certain renal infections (evidently those predominant in the tissues adjacent to the renal pelvis) are usually accompanied by a considerable degree of inflammatory dilatation largely in the calices, whereas, in the other renal infections (evidently those predominant in the renal parenchyma), the dilatation is confined to the ureter, with an actual decrease in the size of the pelvis. The changes more commonly found in the outline of the renal pelvis as the result of an inflammatory process are: (1) dilatation confined largely to the calices; (2) dilatation involving the entire pelvis; (3) pyonephrosis; (4) contraction of the pelvis with the dilatation of the ureter; (5) alternating contraction and dilatation, and (6) atrophy.

Dilatation Predominant in the Calices.—The earliest changes in the pelvic outline, as a result of infection, are commonly characterized by a slight broadening and irregular rounding or "clubbing" of the calices, with scarcely recognizable changes in the true pelvis. As the inflammatory process progresses, the dilatation in the calices may become well marked, while little or no dilatation may be apparent in the true pelvis. Marked dilatation of the upper ureter, particularly at the ureteropelvic juncture, is commonly seen with dilatation in the calices.

Dilatation Involving the Entire Pelvis.—With inflammation of long duration, dilatation of the true pelvis to a variable degree, may also result. This occurs secondary to the dilatation in the calices, and is continuous with that in the ureter.

Inflammatory Contraction of the Renal Pelvis.—A decrease in the size of the pelvic outline frequently accompanies infection, which is largely confined to the renal parenchyma, involving the pelvis and ureter secondarily. The pelvis may appear markedly contracted, with narrow slits representing the calices.

Destruction of Pelvic Outline, or Pyonephrosis.—With the extension of the inflammatory process and consequent destruction of the normal outline of the calices, the cortex may be invaded, and the resulting areas of necrosis may merge with the calices. The areas of cortical destruction which extend beyond the calices may be connected by narrow isthmuses with the apexes, so as to give a very irregular outline to the pelvis.

Alternating Contraction and Dilatation.—With a chronic inflammatory process largely confined to the renal pelvis, its outline may become irregularly contracted as well as dilated. This may be due either to contraction as the result of inflammatory changes in the peripelvic tissues, or to encroachment on the lumen by inflammatory proliferation of the pelvic mucosa.

Fig. 2 (224202).—Microscopic section showing increase in size of lumen, leukocytic infiltration of submucosa and cicatricial changes in serosa. Comparative diminution of muscle fibers.

Atrophic Contraction of the Pelvis.—An atrophic condition of one or of both kidneys is occasionally observed. Microscopic examination of the renal tissue often demonstrates the existence of an etiologic inflammatory process. The resulting cicatricial changes may cause diminution in the size of the pelvis commensurate with the decrease in parenchyma.

Inflammatory dilatation of the renal pelvis frequently accompanies renal stone, and may be of diagnostic value. The typical clubbing of the calices, with little or no dilatation of the pelvis or ureter, is frequently observed. That the stone could not cause mechanical obstruction is evident from the fact that the stone may be securely lodged at the end of a calix. Such dilatation may be of definite value in interpreting the identity of a small shadow in the renal area.

The Ureter.—As with inflammatory changes in the renal pelvis, an inflammatory process in the ureter is followed by tissue changes in its walls which cause more or less dilatation. The changes in the pelvic outline may be so slight as to remain unrecognized, whereas the dilatation in the ureter may be the only evidence of a previously existing inflammatory process. The outline of the ureter, if well distended with mediums, will appear dilated as the result of infection. This dilatation is usually greatest near the ureteropelvic juncture, in contrast to the dilatation resulting from stricture of the lower ureter, which is usually greatest near the point of constriction. The ureter, particularly in its upper portion, is frequently tortuous, and occasionally appears markedly angulated.

The portion of the ureter situated in the wall of the bladder will not become dilated to the extent of the ureter above, unless the bladder itself is markedly inflamed. Dilatation of this portion of the ureter is the result of contiguous infection and is usually observed only with marked chronic infection of the bladder wall. On cystoscopic examination, no contraction of the dilated meatus may be visible, which would lead one to believe that with the alteration of tissue in the ureteral wall peristalsis is absent. Such dilatation may often be demonstrated by filling the bladder with an opaque solution and placing the patient in the Trendelenburg position, thus permitting the fluid to enter the ureter by gravity. This method will usually be found impossible unless the ureter in the wall of the bladder is dilated, since the contraction of the meatus and ureteric peristalsis would otherwise prevent the fluid from entering the ureter. Regurgitation of bladder fluid into the ureter, ascribed to insufficiency of the ureteral valve, has been noted by Hagner,[2] Kretschmer[3] and others. Hagner surmised that this was the result of inflammatory changes in the bladder wall.

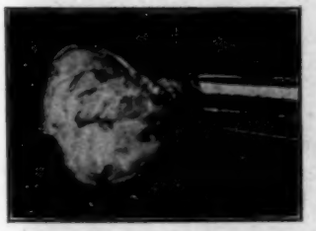

Fig. 3 (25012).—Cross section of tuberculous ureter. Specimen hardened; actual size of ureteral lumen not apparent.

Ureteral dilatation is frequently observed with prostatic obstruction, and is usually ascribed to the result of mechanical distention. While this may be true in most cases, considerable ureteral dilatation has been observed in which the retention never was greater than approximately 50 c.c. This usually occurs in the presence of a variable degree of chronic pyelonephritis, which is evidently the etiologic factor.

Combined Inflammatory and Mechanical Dilatation.—It must, of course, be considered that both inflammatory and mechanical factors may be present with ureteral and pelvic dilatation. Either factor may be the primary cause of dilatation with secondary influence of the other. Thus, a primary inflammatory dilatation, such as occurs with chronic pyelonephritis, may be complicated by a stricture formation, with the usually subjective symptoms of urinary retention. Likewise, a primary stricture of the ureter will sooner or later cause urinary infection, together with an inflammatory invasion of the ureteral wall. In fact, it may be difficult to determine which was the primary factor.

Fig. 4 (25012).—Microscopic section of tuberculous ureter, showing round cell infiltration of submucosa and cicatricial changes in serosa.

Pathology of the Inflamed Pelvis and Ureter.—The frequency with which dilatation of the ureter and pelvis is observed at necropsy, when no evidence of mechanical obstruction can be found, has been noted by various observers.[4] With chronic infection of the pelvis and the ureter, a change takes place in their tissues which is evidently the cause of dilatation. When the pelvis is opened, the calices are usually dilated to a variable degree, and the pelvic wall is thickened. When dilatation of the true pelvis is present, it is not so great as that usually seen with mechanical obstruction to the ureter, nor is there such thinning of the walls. On inspection, the increase in size of the ureter is found to vary from a slight degree to a diameter of 2 cm. Dilatation to a greater degree than this is usually the result of mechanical obstruction. On palpation, the ureter is discovered to be thicker than normal and firmer. This is particularly so with renal tuberculosis. On cross section of the ureter, the walls are seen to be hypertrophied, and the lumen is increased in proportion. With some cases of infection, the changes found in the ureter may be greater than those visible in the pelvis. A microscopic examination of the walls of the pelvis and the ureter reveals the abnormalities: (1) proliferation and often cornification of the mucosa; (2) a variable degree of leukocytic infiltration of the submucosa and musculature; (3) a variable degree of connective change in the submucosa and serosa, and (4) a relative thickening, often to a marked degree, of the serosa. In the main, the inflammatory changes differ from the mechanical in (1) the greater degree of leukocytic infiltration; (2) in more marked con-

2. Hagner, F. R.: Regurgitation of Fluid from the Bladder to the Kidney During Ureteral Catheterization, Surg. Gynec. & Obst. **15**: 510 (Oct.) 1912.

3. Kretschmer, H. L., and Greer, J. R.: Insufficiency at Ureterovesical Junction, Surg. Gynec. & Obst. **12**: 228-231 (Aug.) 1915.

4. Robinson, B.: Potential Obstruction of Tractus Urinarius; Occasional Nondemonstrable Causes of Uro-Ureter, Internat. J. S. **22**: 367, 1909.

nective tissue changes in the submucosa and serosa, and (3) in increase in thickness of the serosa.

Data with Renal Tuberculosis.—Of particular interest is the dilatation which may occur with renal tuberculosis. The cystoscopic picture of a gaping, dilated meatus, with marked inflammation around it, while the other meatus is quite normal in its aspect, is familiar to us all in the classical picture seen with unilateral renal

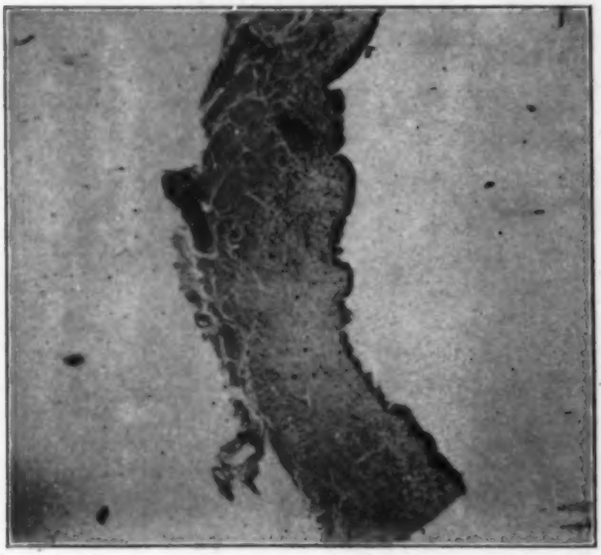

Fig. 5 (181497).—Mechanical dilatation. Microscopic section of a ureter dilated by a stricture. Note thinning of section of serosa and submucosa with comparative hypertrophy of musculature.

tuberculosis. The bladder in this condition is usually contracted, and the possibility of any mechanical obstruction in the urethra can usually be excluded, particularly when the condition occurs in the female. If a nephro-ureterectomy is made, the ureter is usually found with one or more strictures above the bladder wall. Occasionally, however, it may be found to be dilated throughout its entire extent,[5] with absolutely no semblance of a constriction in any portion. The pelvis is often found to be slightly dilated; the calices to a variable degree, some very markedly, and some extending into the necrotic cortical areas. It would appear that any possibility of mechanical obstruction could be absolutely excluded, and yet we have a dilatation which remains to be accounted for. On microscopic examination, the walls of the ureter may fail to disclose any particular point of cicatricial narrowing, but will have the typical tissue changes seen with inflammatory reaction.

ATONIC DILATATION

Dilatation of the ureteral meatus, associated with paralysis of the bladder resulting from disease in the nervous system, was described by Koll.[6] Such a dilatation occurs with only a small proportion of so-called "cord bladders." The dilatation of the ureter is not confined to the lower end, however, but may extend to the renal pelvis. Such a dilatation may in some instances be due to backing of the urine from the overdistended bladder; atonic ureteral dilatation may be found, however, when no residual urine is present. It is more probable that the same disturbance of innervation of the bladder also affects the ureter, particularly in its lower portion. With the relaxation of the bladder musculature, as frequently occurs with spinal cord disease, the ureter may relax to a proportional extent. That such a dilatation may involve the entire ureter can occasionally be demonstrated by a cysto-ureterogram.

Another form of dilatation involving the ureter and pelvis has been described by Fedorow,[7] Israel,[7] Bachrach,[8] Buerger,[9] Kretschmer[9] and others, a form in which no definite etiologic factor is evident. Neither mechanical obstruction, evidence of infection nor disease of the central nervous system may be present. The ureteral meatus is gaping, the entire ureter dilated to a marked extent, and a variable degree of hydronephrosis may exist. This condition is usually bilateral, and has been variously ascribed to atony (Fedorow), spasmodic contracture of the bladder (Israel), inflammatory dilatation (Karaffa-Korbutt), and congenital insufficiency of the ureteral sphincter (Bachrach). While the different authors differ widely in regard to the etiologic factor, they are all agreed in stating that no stricture can be demonstrated. We have observed five such cases at the Mayo Clinic, and the condition was bilateral in all. One of the patients died following a cysto-ureteropyelogram, the medium used being collargol. On postmortem, both ureters were found to be dilated throughout, and the kidneys were hydronephrotic. No evidence of mechanical obstruction was evident in any portion of the urinary tract, nor was there any clinical evidence of disease involving the central nervous system.

Congenital stricture is such a rarity as to be an almost negligible factor. It is probable, furthermore, that many cases of dilatation reported as due to con-

Fig. 6 (260776).—Typical inflammatory dilatation. Note distention of calices. Pelvis small.

genital stricture are really the result of an acquired mechanical obstruction.

5. Crabtree, E. G.: Pathology of Tuberculosis of Kidney and Ureter, Modern Urology, Philadelphia, Lea & Febiger, **2**: 509, 1918.

6. Koll, I. S.: A Study of Twenty-Five Tabetic Bladders, Surg. Gynec. & Obst. **20**: 176-177 (Feb.) 1915.

7. Quoted by von Karaffa-Korbutt, K.-V.: Zur Frage über die Entstehung und die ätiologische Bedeutung der Ureterenanatomie, Folia urolog. **2**: 167-185 (April) 1908.

8. Bachrach, R.: Ueber atonische Dilatation des Nierenbeckens und Harnleiters, Beitr. z. klin. Chir. **88**: 279-286 (Dec.) 1914.

9. Buerger, L.: Congenital Hydro-Ureter and Hydronephrosis, Internat. Clin., Series 24, **4**: 243-249, Philadelphia, J. B. Lippincott Company, 1914.

CLINICAL DATA

When viewed from a clinical standpoint, the subjective data accompanying mechanical and inflammatory dilatation are quite distinct. It is difficult to conceive that there may be, without the presence of pain, an intermittent mechanical obstruction, with consequent overdistention of the pelvis and ureter by the retained urine. In the majority of cases the degree of

Fig. 7 (230063).—Inflammatory dilatation, with cortical infection characterized by a decrease in the size of the pelvis and calices, and by a dilatation of the ureter.

pain is usually great, although it may be conceivable that with partial obstruction it might be of a moderate character. However, if it is sufficient to cause any marked degree of dilatation, the pain will necessarily be severe. With the dilatation such as is so frequently seen with chronic pyelonephritis, however, there is usually little or no pain referred to the kidney. We have repeatedly demonstrated marked dilatation, particularly of the ureter, which we regard as due to inflammatory causes, when the patient has complained of no pain whatever. In reviewing 240 cases of pyelonephritis, Thomas[10] found that pain was present in less than 20 per cent. If a history of definite pain is present, we have been led to believe that there must be some complicating mechanical obstruction present.

CONCLUSIONS

1. Dilatation of the ureter and renal pelvis may occur without mechanical obstruction.
2. The differences between mechanical and inflammatory dilatation, in their anatomy and pathology and in clinical data are quite definite.
3. The clinical demonstration of inflammatory dilatation may be of diagnostic value.

ABSTRACT OF DISCUSSION

DR. GUY L. HUNNER, Baltimore: As Dr. Braasch has intimated, we differ somewhat in our views concerning the questions of inflammatory and mechanical dilatation of the ureter and kidney pelvis. I think we all agree, perhaps, as to this class that he has put under the atonic dilatations, and we still have the question open as to what makes the dilatation in the tuberculosis cases that are dilated. It has always seemed to me that in those cases the ureter is blocked at some stage and becomes dilated, and possibly at the time of necropsy or of operation, the tissues which were blocking originally have sloughed away and have left merely the dilated inflammatory shell of the ureter. But the chief point at issue between Dr. Braasch and myself is the question of dilatation due to mechanical obstruction or to inflammation. Dr. Braasch showed slides of cases of mechanical dilatation due to ureteral stricture. I did not see any that showed the actual area of the stricture, but from the condition of the ureter I should judge that many, if not most of those cases, have a stricture in the lower end of the ureter. If you are thoroughly familiar with this work you can tell in the majority of cases by inserting an ordinary catheter or bougie, whether a person has a stricture. Sometimes I treat some of these cases of pyelitis by lavage, and it is only after wondering why the lavage does not clear up the infection, that I test out with a bulb and find that a stricture is present that is keeping up the infection and making the treatment ineffective. On the other hand, the ordinary catheter or bougie does dilate some of these strictures sufficiently so that they do clear up promptly. The men who are working in this field with the Nitze type of cystoscope will have to get some method whereby they can use some sort of a bulb, so that in getting a hang of the bulb on withdrawal they will be able to say whether the patient has stricture.

DR. HUGH H. YOUNG, Baltimore: This question is one of very great interest. It has been puzzling for many years to explain why dilatations of the ureters are seen in the roentgenogram, and very few symptoms or signs are present to explain them. Dr. Hunner has explained why some of them occur, certainly in women. There are many cases in men in which it is impossible to explain why they occur. I think there is no doubt that congenital conditions have a great deal to do with it in certain cases. We have fol-

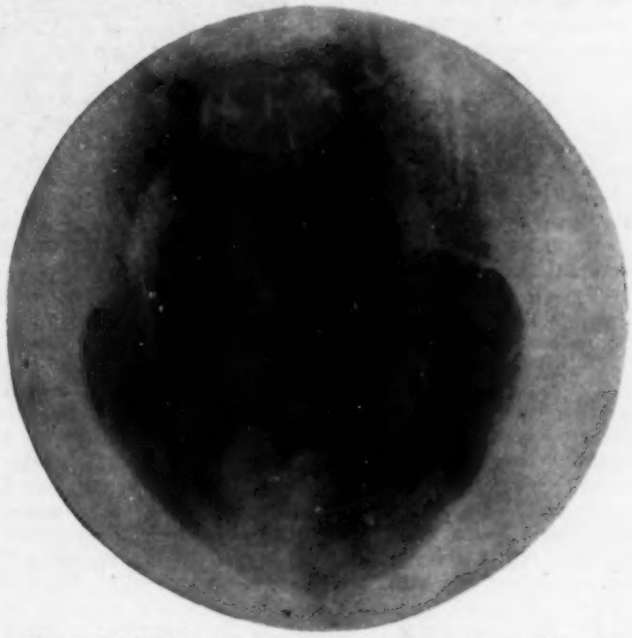

Fig. 8 (117716).—Atonic dilatation of the ureters resulting from lesion of the central nervous system.

lowed a very interesting group of children with dilated ureters in whom we found congenital obstructions in the posterior urethra. Some of these conditions are definite diverticula, often flaplike, flaps that fill up from above and obstruct in that way, and yet can be emptied by pressure from below. They generally have a small opening by which urine can escape with difficulty, and there is a dilated urethra above, dilated and often thickened, and sometimes complete dilatation of the ureters above that. Congenital

10. Thomas, G. J.: Clinical Review of Two Hundred and Forty Cases of Nonsurgical Infection of Kidneys and Ureters, Urol. & Cutan. Rev. **20**: 127-130 (March) 1916.

bars at the prostatic orifice undoubtedly may be the cause of dilatations of the urethra and of the kidney pelvis. I feel quite confident that many cases of pyelitis due to obstructions, are due to chronic bars, often congenital or, at any rate, occurring rather early in life and often persisting for many years. In the treatment of the pyelitis in these cases, we have used nitrate of silver, often with startling results, but most often with no results at all. Recently we have been testing out a new product brought out by the chemical laboratories of the Brady Institute. It is called "220" because that happens to be the serial number of the experiments. It is really a combination of the sodium salt of mercury and a rosin base. We have had a few cases in which we have been able to clear up renal and vesical infection with startling rapidity. In one case of chronic cystitis of four years' duration the patient was absolutely cured after three treatments.

Dr. Leo Buerger, New York: We are indebted to Dr. Braasch for having emphasized the rôle that infection plays in ureteral dilatation. However, I would like to add one thing that from the pathologic standpoint ought to receive more attention, and this concerns the pathologic processes about the kidney as well as the ureter; namely, that there are two factors, the exact nature of which we cannot estimate accurately, that are responsible for the pathologic product in ureteral lesions: first, the type of infection, and second, the peculiar reaction of the tissues in each case. In tuberculosis of the urinary tract the tissues manifest a tendency to elaborate sclerotic masses in and about the part involved, particularly when this is the ureter, but also in and about the kidney. What plays the greatest rôle in altering mechanical conditions in the urinary tract are the type of infection and this specific body reaction. Thus we encounter some types of inflammation, a very much dilated ureter with attenuated walls not of mechanical origin solely, but the result of a combination of obstructive lesions plus infection. And in other cases we find a ureter that is enormously thickened, by virtue of a peculiar kind of infection present, together with the result of the body reaction. So we see about the kidney in many cases perinephritic inflammatory processes, which produce an enormous amount of perirenal fibrosclerotic tissue. In such cases, the upper ureter is drawn toward and bound down and agglutinated to the mesial border of the kidney. A knowledge of this circumstance is of no little importance in the identification of calculus in the upper ureter when the situation seems altogether too far out (lateral) and too near the lower end of the mesial border of the kidney. Not only can we be certain of the nature of such a shadow but in the presence of a clear renal outline the existence of the pathologic ureteral displacement can be recognized at once. Conversely where no such fibrosclerosis is present the use of the shadowgraph catheter and cystoscopy will show that a shadow (calculus) in the upper ureter can be displaced mesially and can be pushed far away from the kidney toward the spine. At operation we will encounter an enormously distended ureter above the stone, no sclerotic adhesions between the kidney and the ureter and all of this can be prognosticated in advance. If we bear this fact in mind we will often be able to prognosticate dilated ureters in advance of operation and those that are sclerotic, thickened and obliterated. In certain stages of tuberculosis we find enlarged, thickened and sclerotic ureters and more rarely we find enormously dilated, attenuated ureters. I believe that in the latter cases there is a tubercular stricture below, with a purely mechanical dilatation above. Regarding the diagnosis, I think it best for the occasional cystoscopist to abandon the much exploited method of pyleography except in rare instances, not only because it is apt to give annoying reactions and cause inflammatory processes but particularly because the routine employment of the shadowgraph catheter together with the data furnished by cystoscopy will give sufficient data to diagnosticate the condition of the ureter. In the presence of the dilated ureters the shadowgraph catheter will be apt to take an abnormal course, when reaching the kidney pass far out into the lumbar region into the hydronephrotic kidney. Often it will lie mesially to a stone because of the ureteral enlargement, and sometimes make a complete turn on itself so as to point downward instead of upward and even make a complete loop in the ureter when the latter is ample in capacity.

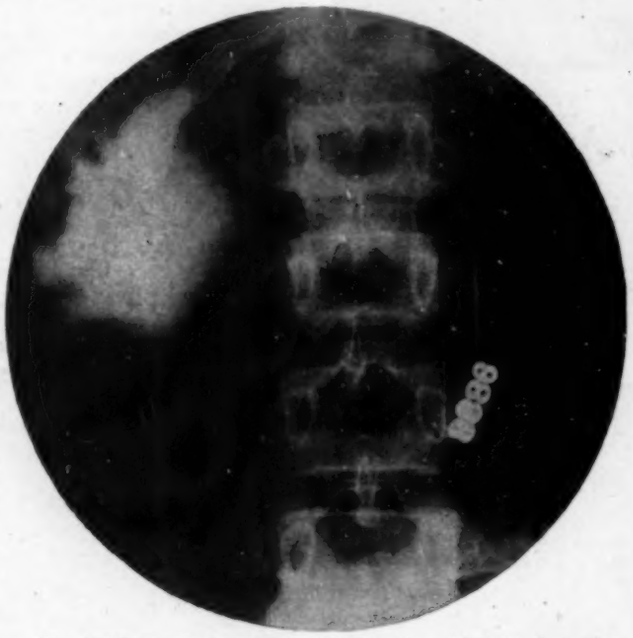

Fig. 9 (8886).—Typical mechanical dilatation. Note the large size of the true pelvis in proportion to the size of the calices.

Dr. Albert E. Goldstein, Baltimore: As to the diagnosis of stricture of the ureter in the male. Frequently, I asked Dr. Hunner why we did not see strictures of the ureter in the male, and his answer was that we did not look for them. I agree with him. Since I have looked for ureteral strictures in the male I have found them. My method of procedure has been somewhat similar to Dr. Hunner's, that is, passing a wax bulb. I pass the wax bulb on a catheter into the urethra and then into the bladder, and then pass the cystoscope over the catheter. In this way the catheter is passed up into the ureter and on withdrawing the catheter (after the cystoscope has been removed), the hang, which Dr. Hunner refers to, is obtained if a definite stricture is present. It is not always possible to diagnose a stricture of the ureter by passing a catheter and meeting an obstruction, for the same reason that one does not always determine a stricture of the urethra by the obstruction he meets with the bougie, but on the hang, on withdrawal, unless it is very dense. I have had a number of cases of angulation of the ureter, where the ureter was held by some aberrant vessel. These cases were seen only on pyelography or ureterography. Several of my patients have been relieved by passing a catheter into the ureter several times, and several were operated on.

In a case of painless hematuria, which I thought at first was a case of essential hematuria, I catheterized both ureters on two occasions and saw blood coming from each ureter, but following the catheterization the hematuria ceased. I did not inject silver nitrate, not being certain about the diagnosis. Whether this has any bearing on stricture of the ureter or not, I do not know. About the shadowgraph catheter, I differ with Dr. Buerger. I do not think that you can make a diagnosis of stricture of the ureter just by passing a radiographic catheter, as most true strictures have dilatations above, and it is necessary for some shadow casting substance to be used to demonstrate the dilatation. Thorium is not dangerous in proper hands. If injected properly and allowed to drain after pyelography, one should use it in every case where it is expected to find some mechanical obstruction.

Dr. John R. Caulk, St. Louis: I believe we are somewhat at variance in our interpretation of just what a ureteral

stricture is. In the paper and in the discussion we have not heard a thing about ureteral spasm. It is my impression that we must consider two types of stricture, that is, true organic stricture and the spasmodic contractions of the ureter. I see more and more of this spastic type. I have been looking for strictures, and the more I look, the fewer organic ones I find. We must take into consideration the periureteral tissues, seminal vesicles and the pelvic organs in the female. I do not believe that we can diagnose a ureteral stricture with a ureter catheter, nor do I believe that we can always diagnose a ureteral stricture with a ureterogram. We do a great deal of ureteral catheterizing, we make a great many ureterograms, and we see a lot of contractions which would lead one to believe that there was a definite stricture. You may repeat the examination and get the same finding. If you will give that individual repeated doses of atropin, a large catheter can usually be passed up the ureter without obstruction. On the contrary, the passage of a ureteral catheter through an obstruction with relief of symptoms does not mean that you have cured a patient because you dilated the stricture. In the urethra you can pass a sound during a spasm and relieve symptoms. You may have passed a catheter through the region of spasm and relaxed it. I do not want to be understood that I am doubting the presence of a ureteral, inflammatory stricture, but, aside from the tuberculous strictures of the ureter from the infiltrations from without, and those secondary to stone, I think ureteral strictures are nothing like as common as they are supposed to be. In our experimental work on ureteral ligation in animals, we found that the ureter could be tied and left so, and you have a perfect stricture, absolutely tight, sealed. At the end of a year you cannot tell which ureter had been tied. They are both open and smooth, without evidence of stricture. That is why I believe that spasm is a very important cause of ureteral obstruction.

DR. ALFRED I. FOLSOM, Dallas, Texas: The question which is most interesting to me is the difference in the explanation of the findings in these cases, whether or not these dilatations in the pelvis and in the ureter are due to an inflammatory dilatation, as Dr. Braasch calls it, or whether they are due to obstruction. I am unable to see why an inflammatory process will retract the ureteral wall. In order to retract the ureteral wall so as to give a dilatation, one must presuppose some point of support outside the ureteral wall for the retracting force, a thing difficult to understand. The only result of an inflammatory process in the ureter when it is acting alone, seems to me to be tending toward a contraction. If I understand the physiology and pathology of hollow tubes in our body, that is what it means. In other words, if we have, acting alone, an inflammatory process either in the pelvis or in the ureter, the tendency is to have that contracted and narrowed. When we find these conditions reversed, that is, when we find an actual dilatation occurring in these inflamed ureters, it means that we must find some explanation outside of the inflammation to account for it, and I believe that in the majority of these cases some type of obstruction is the real cause of the dilatation. It seems to me that we are forced to decide between these two forces. The reason why we find some inflammatory ureters that are not as dilated as others, and the reason we sometimes find ureters that are dilated in one portion and not in another, is the fact that in certain areas the contracting force due to the inflammation in the wall of the ureter is greater than the dilating force due to the obstruction lower down. And the balance of these two forces seems to me to decide and to explain the difference in the pictures we see, both in Dr. Braasch's series and in Dr. Hunner's series. We have two conflicting forces, and the balance of power as between those forces decides whether we are going to have a normal size ureter due to the preponderance of the contracting force of the inflammatory wall, or whether we are going to have a dilatation due to the fact that the hydrostatic pressure due to the back pressure, resulting from the obstruction, is greater than the inflammatory process. To me, this is the crux of the whole situation, and I believe on that is ultimately going to depend the correct solution of this problem.

DR. W. F. BRAASCH, Rochester, Minn.: There is a difference of opinion as to the frequency with which we meet strictures in the ureter. I am under the impression that they do not occur as frequently as Dr. Hunner believes. Furthermore, it is questionable whether the "hang" of a bulb on a ureteral catheter is sufficient evidence to diagnose a stricture of the ureter. It hardly seems possible that the great variety of symptoms which have been ascribed to ureteral stricture could be cured by simple passage of a large dilating bulb. Furthermore, it is difficult to understand how a chronic stricture of the ureter can exist without causing dilatation of the renal pelvis, as Dr. Hunner claims. However, it is very probable that the existence of these wide strictures of the ureter have been overlooked in a small percentage of cases.

NEW JERSEY'S WORK IN MOSQUITO CONTROL *

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President, Atlantic County Mosquito Extermination Commission
ATLANTIC CITY, N. J.

The "Jersey mosquito" seems to be known everywhere and has given our state an unenviable notoriety all around the world. As a matter of fact, the mosquito is no worse in New Jersey than in any other seaboard state having large areas of salt marsh land. In Connecticut, New York, and especially Long Island, Delaware, Maryland, Virginia and all the states bordering on the Atlantic seaboard, the same problem exists, and exists as acutely as it does in New Jersey; but the millions of visitors to the coast resorts of this state have been the means of our opprobrious advertisement in all corners of the globe.

Living in an era of intensive research and practical achievement, we cannot appreciate the passive attitude of accepting pests, such as the mosquito, and other health scourges without an attempt at relief when the methods of relief are practical and efficient. It is not realized that it often costs a community and the citizens of it personally much more to support a mosquito nuisance than to eliminate it.

As long as eighteen years ago, interest was started in New Jersey in the question of mosquito elimination. In 1901 an organization made up of a few public spirited citizens was formed in Orange, N. J. These men at that time had little information as to the life history, habits or varieties of mosquitoes, which is so necessary in effecting their elimination. Their work proved more or less discouraging because, in spite of money spent and work done, there were times when great hordes of mosquitoes infested the community.

About this time the late Dr. John B. Smith, the state entomologist, one of the greatest pioneers in this work, began to investigate the situation. He collected perhaps the most valuable fund of information known as to their life history, habits and varieties, and his published report will always be a superb classic and an unparalleled contribution to the knowledge of the subject. Dr. Smith created so much interest among his friends and was so successful in proving by his experiments that the elimination of this pest could be accomplished, that he finally succeeded in getting the legislature to pass an act appropriating $350,000 for

* Read before the Section on Preventive Medicine and Public Health at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

the work. This was to be set aside as a fund largely for experiment, a certain amount determined by the law makers to be appropriated annually. He soon demonstrated that it was no idle dream, but the work progressed so slowly that the legislature in 1912 passed an act creating commissions in each county, the funds to be raised by the assessment of from 0.25 to 0.5 mill on each dollar of the tax budget of each county.

Commissions were then appointed in the various counties, the seaboard counties being the most active in the matter. These commissions then went actively to work to solve the problem by obtaining all the known data on the subject, employing expert engineers and practical men, and forming a state organization

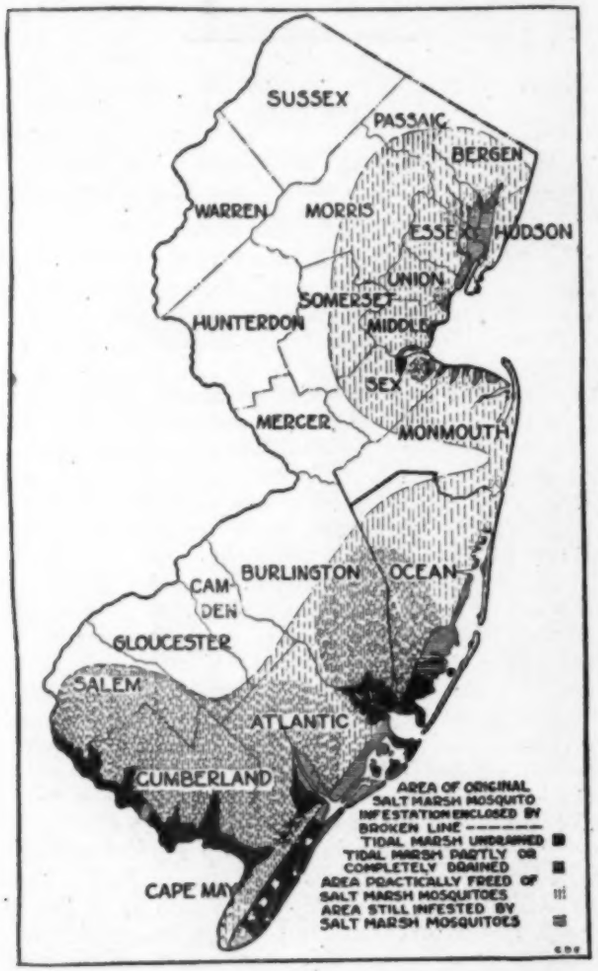

Fig. 1.—Flight of salt marsh mosquitoes inland from coast.

which meets annually to exchange views on the question. These county commissions are coordinated with the state experiment station and are under the direct supervision of the state entomologist, Dr. T. J. Headlee. The result is that the movement is organized all over the state. It is the most perfect organization, perhaps, of any large public movement in the state, and numbers several thousand enthusiasts in its membership.

"The work of New Jersey, which was the first state to take up this question," says Dr. L. O. Howard, the entomologist of the Smithsonian Institution, and perhaps the world's greatest authority on mosquitoes, "is so far ahead of every other state and every other country as to stand practically alone." One of the early presidents of the New Jersey Mosquito Extermination Association said a few years ago: "Our work in New Jersey will probably be responsible for a country-wide movement against the mosquito." These words are coming true. The outbreak of the recent war and the necessity for the protection of the health of the soldiers in the camps has brought this matter to a speedier consideration by both the public and the authorities than would have been possible otherwise, although before the war the activities of New Jersey were being felt in many other progressive communities, notably in the malarial districts of certain southern sections. However, when the time came to speed up the protection of the camps from disease, it was to New Jersey and the New Jersey Mosquito Extermination Association that the government called for help. Several of the superintendents of the county commissions of New Jersey were selected to direct and supervise the work in the various cantonments, while the work of the Bergen County commission under the direction of their able chief inspector, Mr. J. B. Leslie, at Camp Merritt, the principal embarkation camp of the army, was a real contribution to the success of the war. The great shipyards at Hog Island and the work at League Island and Bristol were laid out under the direction and advice of New Jersey engineers and mosquito experts.

Camp Merritt, an embarkation camp situated in a malaria district, presented a situation of the utmost importance, since soldiers coming from all parts of the country might acquire infection. Among them also would be numbers of carriers of malaria brought from other states, especially the Southern states. As will be seen, the conditions would have been ripe for a continuous epidemic of malaria, which would have been carried not only to our own troops abroad but to those of all the allies. As soon as the site was chosen for Camp Merritt in 1917, the Bergen County commission made a complete survey of the territory affected and an investigation of malarial conditions then existing. It was found that while the camp stood on high ground it was almost completely surrounded by sluggish streams and overgrown swamps. *Anopheles* breeding was found along the edges of the slowly moving streams and ponds. The situation was pointed out to the commanding officer and the danger explained to him. He immediately saw the importance of it. The Public Health Service and the commission combined forces to push the work rapidly under the direction of the commission, the government supplying the labor. The work was pushed rapidly and watched carefully, and the total area controlled was about 15 square miles. The result was that during the summer of 1918, mosquitoes in and around the camp were reduced so far below the nuisance point as to be negligible; and although there were some recurrent cases of malaria among the troops coming from a distance, *there was not one case of malaria during the entire summer* which originated at Camp Merritt.

Malaria is the only mosquito-borne disease in New Jersey, and we find that in comparatively few places. There is almost none in south Jersey, but it has been troublesome at times in certain sections of the upper parts of the state. One of the most remarkable examples of what can be done, with comparatively little expense, occurred a few years ago at Princeton. The university students as well as the people of the

village were seriously stricken with an outbreak of malaria. The low lying basins about Princeton were found on investigation to be prolific breeders of *Anopheles quadrimaculatus*, and there was much illness. The small sum of $10,000 was raised and active and systematic work done under the direction of the state director of mosquito extermination by the local authorities. In a year's time the number of cases of malaria dropped from 257 to eight. The following year there were none. The economic importance of

Fig. 2.—Typical marsh pool in meadows near Atlantic City.

this result and the health importance of the protection given to a community like this with its great university is almost unmeasureable. The time allotted for this paper does not permit the mention of many cases in detail. The fact that the United States government was enabled to send millions of soldiers through Camp Merritt, situated in a naturally malarial district, without one single case of malaria occurring there, and the startling result attained at Princeton furnish brilliant and instructive examples of what can be accomplished with thorough organization, anywhere.

Certainly the vision of the pioneers of this work in New Jersey and the tremendous fund of information that has been acquired and is on record deserve our greatest respect and admiration. These men should be proud of their handiwork, which has set the standard for communities in many other states. Those who are interested in mosquito extermination in any way will find scientific and practical discussions of nearly every phase of the subject in the annual reports of the New Jersey Extermination Association for the past six years. These reports have become classics and are much sought after far and near.

All mosquito extermination must be based on the scientific knowledge of the different varieties of mosquitoes and the life history and habits of those to be dealt with in any given community. In nearly all inland places the problem is comparatively easy because it deals with what are known as local types of mosquitoes. Such types as *Anopheles* and *Stegomyia pipiens* never migrate farther than from 1 to 5 miles from the place where they are bred. Cleaning up the immediate district and organizing a good place for follow-up inspection, therefore, will quickly rid any given community of the pest, as in the case of Princeton.

Contrast now, with this, the coastal states with large areas of salt marsh meadow land breeding *Aedes sollicitans*, which has a flight under proper conditions of wind and weather of at least 40 miles. The coast counties also have the same problem of local mosquitoes as inland places, so that the authorities on the one hand must look after all local types of mosquitoes, and on the other must rid the salt marshes within a radius of 40 miles from any given point by a systematic drainage system, in order to have relief.

Of the forty different species of mosquitoes found in New Jersey, practically the only ones of economic importance are the local types known as *Stegomyia*

WORK IN MOSQUITO CONTROL IN NEW JERSEY

County	Total Amount Expended on All Kinds of Antimosquito Work to Date	Area Protected in Sq. Miles in 1918	Population Protected in 1918	Salt Marsh — Total Acres	Salt Marsh — Acreage on which Breeding Has Been Eliminated
Atlantic	$139,503.00	50.0	60,000	49,998	27,636
Bergen	76,000.00	182.0	178,596	8,278	5,800
Burlington	.....	.....	.....	9,943	.....
Camden	.....	.....	.....	.....	.....
Cape May	30,000.00	10.0	6,000	53,638	20,480
Cumberland	.....	.....	.....	52,661	.....
Essex	406,845.90	126.0	665,000	4,500	4,500
Gloucester	.....	.....	.....	.....	.....
Hudson	177,060.42	42.5	670,467	11,468	7,000
Hunterdon	.....	.....	.....	.....	.....
Mercer	.....	.....	.....	.....	.....
Middlesex	31,510.96	311.9	135,000	8,100	4,500
Monmouth	26,619.00	125.0	58,000	3,278	3,278
Morris	2,000.00	Survey work only		.....	.....
Ocean	35,000.00	.....	20,000	40,000	27,000
Passaic	75,263.96	36.0	245,000	.....	.....
Salem	.....	.....	.....	31,780	.....
Somerset	.....	.....	.....	.....	.....
Sussex	.....	.....	.....	.....	.....
Union	182,000.00	104.0	150,000	4,413	4,000
Warren	.....	.....	.....	.....	.....
Totals	$1,181,804.13	987.4	2,188,063	278,365	114,394

pipiens or the house mosquito, and the malarial *Anopheles* group. The other local types are negligible. The real problem in New Jersey is to rid the state of *Aedes sollicitans*, which at times makes life miserable for nearly half of the population of the state by reason of their long flight from the seacoast, inland. Hotels will fail, summer resorts die and agricultural and industrial interests lag if unfortunate enough to be situated in districts badly infested by hungry hordes of mosquitoes. It is for this reason that New Jersey

Fig. 3.—Machine-cut ditch 10 inches wide by 30 inches deep, such as is used in all antimosquito work in Atlantic City.

has waked up to the vital importance of freeing the whole state from this menace to health and progress, and is setting the pace for other states. This community and many others in the state have been freed entirely from local and disease-bearing species of mosquitoes, but much work still remains to be done before the vast areas of marsh land will be clear.

About 16,000,000 feet of standard 10 by 30 inch ditching have already been cut on the salt marshes

in the state; about one third of this is in the county of Atlantic, representing about 1,100 miles of ditching or one third of the distance from here to Paris. There are in the state 296,000 acres of salt marsh. There still remains to be treated about 150,000 acres, so that it

Fig. 4.—Old style wooden drain holding water at all times.

may be seen that the work is about half completed. During the next five years, according to the plans now laid, this whole area will be drained and New Jersey, the home of the mosquito, can say to the world that it has no mosquitoes. Can any other state say as much by that time, especially the coast states having the same difficulties as New Jersey?

After all the work is done, the maintenance of it is of supreme importance. It is estimated from the experience already gathered that the maintenance cost per year per acre will average 35 cents. The area which has up to date enjoyed protection from the mosquito pest is 937 square miles. The population protected by this work is 2,188,063 people of the state. The per capita cost of such protection is about 15 cents.

ORGANIZATION OF A COUNTY UNIT

It might be of interest to describe the organization of a county unit, such as exists in this county and many others of the state. A commission composed of six men is invested with the responsibility of the work. A superintendent or chief inspector is the active head who, with his assistant, has full charge of the office, the various gangs of salt marsh workers and the local inspectors of the fresh water work. It is necessary for the chief inspector to be a thorough expert mosquito man and a practical executive. The work on the marshes is done by ditching machines which cut ditches 10 by 30 inches very rapidly through the marsh. Five hundred feet can be cut often in fifteen minutes, and as much as from 1,000 to 5,000 feet in a day's time. Each machine gang is under a foreman, and consists of five men. The number of feet that can be cut per day is limited only by the number of machines and machine gangs that can be employed, and that is a question of money. There are in this county, alone, about 50,000 acres of marsh land, and of this 61 per cent., or about 37,000 acres, have been drained, leaving about 13,000 acres yet to be done. These ditches, draining into open thoroughfares and bays, allow the tides to come and go through the ditches, which are placed about 100 feet apart. As the tide recedes, the meadow land between the ditches is dried out by seepage, making mosquito breeding impossible; at the same time it allows millions of the small killifish to run up the ditches and into the pools. These fish are our most efficient allies, because they feed on the mosquito larvae. During severe flights of mosquitoes, when the undrained meadows were producing billions of mosquitoes, our patrol service has found practically no breeding on the drained and ditched meadow. That is the best test of its efficiency.

Constant patrol is given this vast stretch of marsh, and whenever breeding is found it is charted on a map in the central office so that everything the mosquito does is known at headquarters. Whenever a ditch is ineffective or clogged, all points in regard to the development of a brood of mosquitoes are charted daily, so that it can be told several days beforehand just what is going to happen, and according to the direction of the winds just what communities are going to be troubled on a certain date with an infestation, and how severe it will be.

This refers to the coast and the marshes; but the large part of this country is not on the coast, and the inland dweller is not interested in it. His problem is the fresh water or local types of mosquitoes. It is much simpler and much easier to produce almost immediate results with these varieties, because of their short migration.

The organization of this work is under the same executive head as the marsh work. Each city in this county is divided into districts. Each district is given to a local inspector whose duty it is to cover every property in his district every ten days in the mosquito

Fig. 5.—Boats open to the weather will soon raise a crop of insects.

season. The inspection of each property made for the day is recorded on a separate card and checked up at the office at the close of the day and filed. If he has found breeding on any property, this report must be on a pink card. It is his duty to eliminate such breeding as may be found in a rain barrel or a tin can, or other receptacle, and note just what and where it was.

If it is stagnant water under a house or in some other locality, it is reported, and the ditching squad or the oiling squad follows it up the next day. If the water can be drained away, it is done. If not, it must be oiled. Each pink card report filed in a separate case must be followed up in not less than ten days and

Fig. 6.—One of the beauty spots of Atlantic City. Water under such rubbish is hard to oil for mosquito elimination.

checked up. When oiling is necessary, the oiling squad must be on hand regularly every ten days to oil the surface of the water; but in reality in this community oiling is a small part of the work. As a matter of fact, after the first complete inspection at the beginning of the summer there is not much difficulty with local types of mosquitoes, except in the new conditions that may arise from week to week; and as soon as these are discovered, they are promptly eliminated. A large wall map of the city shows every spot in the city on which mosquito breeding has been eliminated for the year, and is valuable as a clue to any trouble that may arise in the future years.

By systematic organization of this sort and careful follow up work, knowing the kind of mosquito to be dealt with and his life habits and proclivities, any community with a comparatively small expenditure may rid itself of this terrible pest and enemy of health. In many communities there are engineering problems of tide gates, dikes and other methods of handling drainage besides ditching. All these may be overcome by intelligent cooperation and intensive study, and there ought to come a time when every community infested with mosquitoes will be as much under the ban as if it had the worst sanitary conditions. As a matter of fact, these two things, mosquitoes and bad sanitation, usually go hand in hand; where the one is, the other will be found.

1704 Pacific Avenue.

ABSTRACT OF DISCUSSION

DR. JUAN GUITERAS, Havana, Cuba: I would like to ask here whether any responsibility is attached to the house owners in connection with domestic mosquitoes; whether the house owner is considered responsible for mosquitoes bred in water barrels and other water containers; whether any system of fines is established and imposed on such persons.

DR. JOHN E. FERRELL, New York: I think all who have been interested in the subject of malaria control, will receive encouragement from the paper which has been read today, indicating the feasibility of mosquito control in the very difficult areas of New Jersey. I have no doubt that those present know of the malarial control measures which have safeguarded the troops at Camp Merritt, and that they have also been carried on in all the camps throughout the country, and it is one of the greatest achievements of governmental agencies, state, federal and local, which have been entrusted with this task. You can start at Camp Merritt and go south throughout the districts where the anopheles mosquito is a menace and find that through the governmental agencies malaria has been controlled. It is important, it seems to me, having this demonstration before us, to suggest that the time has now arrived to maintain what has been obtained throughout these areas, particularly in the South, and to accept the suggestions of Dr. Darnall, and develop whatever agencies may be necessary in extending this work which has made one of the best and most successful health demonstrations we have had in connection with war work.

DR. J. D. MCLEAN, Philadelphia: Pennsylvania is following on the line of New Jersey and being taught by this state in the control of the mosquito. Pennsylvania's state board of health expended last year $99,000 for the elimination of disease breeding spots. The commissioner of health of the state feels assured that in the future his hands will be much stronger than they have been in the past, and that the mosquito breeding spots in Pennsylvania will be entirely wiped out in a very short time. The work is being continued this year and we are spending from sixty to sixty-five thousand dollars on that work. We have several just as bad breeding spots as they have in New Jersey. They are along the Delaware River, and not only in the Hog Island district. They are still farther north.

DR. JOHN P. DAVIN, New York: I am very proud as a member of this section, to hear what has been done at Camp Merritt, because I happen to have a rather intimate association with one of the gentlemen connected with that work, Edward Davin of the U. S. Army, my son.

DR. ARTHUR T. MCCORMACK, Bowling Green, Ky.: I want to call the attention of the section to two practical proposi-

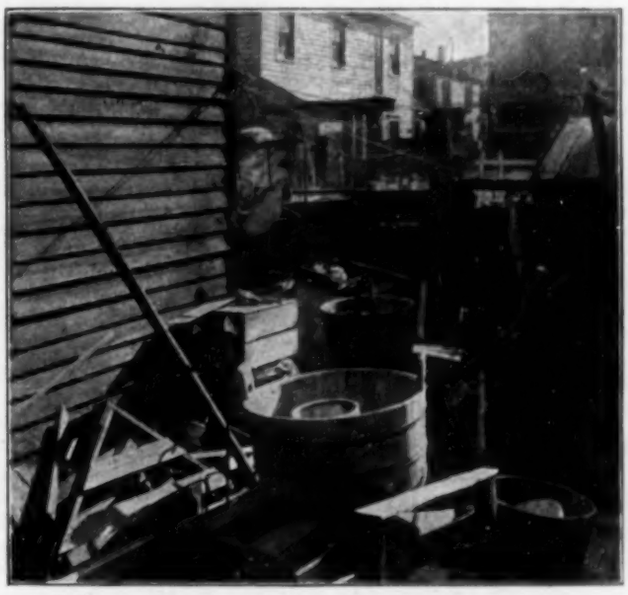

Fig. 7.—A typical back yard on the north side. Some of these tubs were used for washing clothes, others for raising mosquitoes.

tions. In the first place, last year one of our sanitary inspectors in Panama designed a form of sectional concrete ditch bottoms of varying diameters, 30 inches long and about 4 inches thick, of reinforced cement, with a male and female end, so that the segments will fit one into the other, and buttering these segments with green cement, it makes a tight ditch bottom. You can lay it as you lay a pavement, very

readily and very economically, and it gets rid of the problem of ditch maintenance, which is one of the greatest expenses in malarial work, because it involves a greater capital expense. I was in Panama about four and a half months before I saw any mosquitoes in the sanitated area, and then I found two in an unused bathroom in my house. My wife telephoned to the authorities and in about fifteen minutes an automobile truck drew up with a sanitary inspector and five negro laborers from the health department in it. They went through various rooms, and after a short time located the offenders. The sanitary inspector went in with his little test tubes and he caught the mosquitoes. He examined them. It happened to be a variety I knew very little about personally. Apparently there was a hole in the screen, and so he called up the health department. They telephoned down to the proper section, and immediately a truck came with four more men, and they very carefully went over the screening, yard by yard, and found two holes large enough for these mosquitoes to come in. The screening was repaired, and we had no more trouble. In the meantime, the sanitary inspector of the health office came up with a blueprint of the entire area, because this variety of mosquito had a flight of about a mile, and on the blueprint was shown every place where mosquitoes bred. Every place was examined with a view to finding where these mosquitoes had bred. On the second day they found that just about a mile from the house was a wet spot where there had been some clogging of a drain and that little wet water stream, to use a common expression, was responsible. That drain was cleared out, and then the inspectors went to every house within half a mile and they found in two other houses a few mosquitoes. It is interesting to know how thoroughly such work can be done, and to know that that is the standard toward which we are aiming.

DR. WILLIAM E. DARNALL, Atlantic City, N. J.: In reply to Dr. Guiteras' question as to fines, we have no such system, for the reason that in the minds of the layman, the whole problem is yet considered more or less experimental. Nobody believed that anything could be done to free a community of mosquitoes, and therefore, to put fines on people with such an uninformed state of public mind would result in the work becoming unpopular to such an extent it would be dispensed with. One of the main duties of all local inspectors is to instruct people. If mosquitoes are found on your premises and the inspectors find their source in rain barrels or other receptacles, he demonstrates the egg boats, larvae or pupae; explains how they develop into mosquitoes; empties the receptacles in order to eliminate the source of breeding, and instructs the people that it is their duty to eliminate the mosquito, and to keep stagnant water out of every receptacle. That is the way we have accomplished educational results, along, of course, with a certain amount of newspaper publicity. The result is that the whole community is interested.

Education.—Every mind was made for growth, for knowledge, and in its nature is sinned against, when it is doomed to ignorance.—Channing.

THE TREATMENT OF FRACTURES

SOME LESSONS OF THE WAR*

ERNEST W. HEY GROVES, M.S., F.R.C.S.
(ENGLAND)
Major R. A. M. C. (T.); Surgeon in Charge of the Special Military Surgical Hospital
BRISTOL, ENGLAND

The killing of the great war is over, but much of the curing is still to be done. Reconstruction is the order of the day and we shall do well to apply this process to the principles and practice of treating fractures, whether these be the result of gunshot wounds or of industrial accidents. There are a few good things to set against the many evil things of war, and one of them is that the number of each kind of casualty serves to magnify the details of injury together with treatment and results, so that broad principles come to be recognized which would have escaped notice if taught by only a few and scattered cases.

Fig. 1.—Extreme adduction deformity after fracture of femur: left femur, five months after wound; treated by a Thomas splint; note states that the leg was 1½ inches shorter than its fellow. After apparent union had taken place, the deformity here figured occurred, the leg then becoming 4½ inches short.

GENERAL PRINCIPLES IN THE TREATMENT OF FRACTURES

Administrative Principles.—It is within the knowledge of every one who has been closely interested in this question that a very marked improvement has taken place in the treatment of gunshot fractures in the last two years as compared with the first two years of the war. No doubt, experience and better technic have had their share in this, but certain administrative principles have probably had more to do with it than anything else. And it is because these very administrative principles are applicable to civil life that they are especially deserving of consideration today.

No ingenuity of invention nor improvement in operation can compare in importance with the three principles of *segregation, continuity* and *team work,* as regards their good influence in both our knowledge of and good results in the treatment of broken bones.

So long as gunshot fractures were treated for one period at a base hospital in France, for a second period at a general hospital in England and for a third period at a convalescent home, the results were bad in a large majority of the cases in which function depended on skilful treatment.

* Read before the Section on Surgery, General and Abdominal, at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author or by THE JOURNAL on receipt of a stamped addressed envelope.

Reeducation.—One of the greatest advances in military surgery has been the common sense treatment of functional disabilities by reeducation or psychotherapy. By the old method, men with broken legs expected to be lame, and accordingly they invariably were lame, just so long as they were absorbed in their injury and until return to employment provided the necessary reeducation. But the new method has made a great advance over this. The bone having been kept in correct alinement and extended to proper length, the functions of the joints and muscles having been preserved, while the patient is in bed, the patient is from the very outset of his ambulant stage taught to use his leg normally and by the aid of simple instruction he quickly comes to walking well.

The keynote here, too, must be simplicity and common sense, rather than complexity and mysticism—applied early for prevention rather than late for cure of disability.

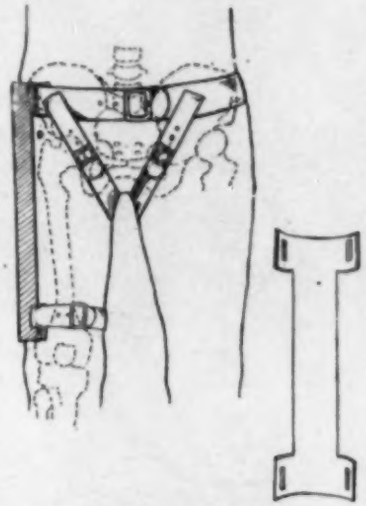

Fig. 2.—Outside thigh splint to prevent adduction deformity. This is applied after extension has secured correct alinement and length and after early union has ocurred. It consists in a steel plate 4 by 15 inches, straight in its length and curved transversely; it is attached above to the pelvis by a wide, padded webbing which is secured from upward displacement by two perineal straps, and below to the thigh just above the condyles. It will be noted that this splint does not fix either the hip or the knee.

THE SPLINT TREATMENT OF FRACTURED FEMURS

The proper correction and maintenance of position of the broken bone is of the first importance. It does not constitute the whole treatment, but it is the foundation on which the whole treatment rests. The painful inadequacy of the correction of displacement in gunshot fractures of the femur in the early stages of the war has forced attention to the subject, and it has now been demonstrated that, even with this most difficult type of case, excellent results can be obtained both as regards structure and function, by a proper system—results which compare most favorably with those of civil practice. A high standard has been reached, and nothing will ever justify a practice which falls short of this ideal in the future. In a large proportion of cases uncomplicated by loss of bone or injury to joints or nerves, we ought to be able to insure three things: full length, correct alinement and good function.

The Thomas System.—The credit for this raising of our standard belongs to one man more than any other, and that is my chief, Sir Robert Jones. He had the experience and the enthusiasm necessary to solve the material problem, and he had the faith which moves mountains of official complacency. He demonstrated that the methods of Hugh Owen Thomas could meet the essential requirements of the case and that it was particularly suitable for gunshot fractures in the field and in transport.

There are certain limitations and drawbacks of the method in which Thomas used his splint.

MODERN METHODS OF TREATMENT BY EXTENSION

These difficulties have been overcome in various ways, and it is the general opinion that better results are secured by:

Active extension by a weight and pulley. Counterextension by the body weight or by a perineal band around the sound leg.

The maintenance of the hip and knee in a position of semiflexion.

The application of the extending force by securing a direct hold on the bone by means of either transfixion or ice-tongs.

One word is necessary as to the question of the site and manner of taking hold of the bones. I have been using transfixion methods for many years and have observed both in my own cases and in those described by others that when the lower end of the thigh is pierced there occurs in a certain proportion of cases a troublesome sepsis. This is due, I believe, to the seton action of the pin and has nothing to do with the transfixion of the bone. So long

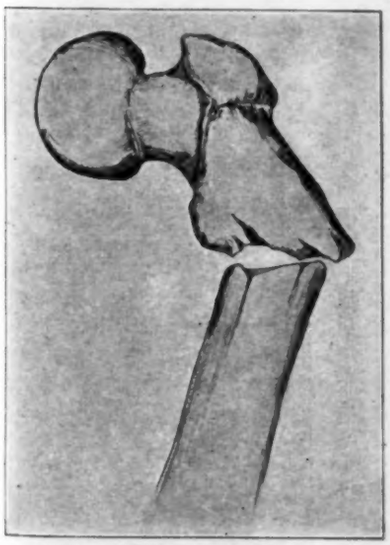

Fig. 4.—Diagram of fracture of upper end of femur with typical displacement.

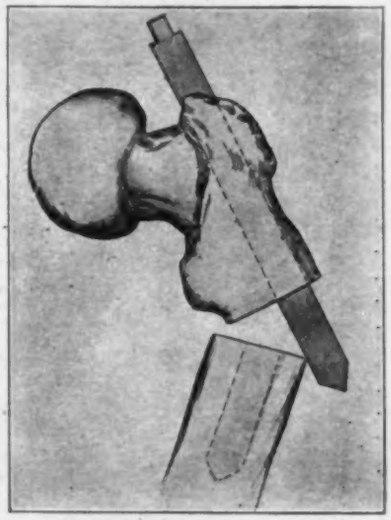

Fig. 5.—Treatment of the fracture of Figure 4 by a long ivory or bone peg (6 by ½ inches). The peg is pushed upward through the great trochanter.

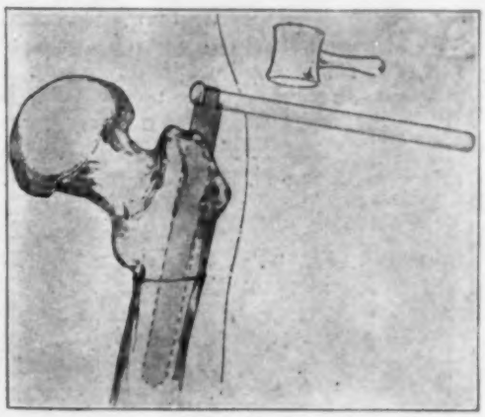

Fig. 6.—The upper end of the peg, exposed through a buttock incision, is grasped by a metal bar, a hole in which fits over a shoulder on the peg. The peg is driven down into the shaft of the femur.

as a rod passes through the skin into the interior of the limb, there must be liability to sepsis. The danger of such sepsis lies in the fact that the track of the pin passes through deep muscle and fascial planes from which either the knee joint or the thigh becomes infected. This seton action of the pin will be shared by the ice-tongs, and in many published papers a considerable incidence of sepsis is admitted with the latter appliance.

Fig. 10.—Pegging upper end of the femur: Private P., thirteen months after wounding; with ununited fracture of upper end of femur. The proximal fragment is tilted in front of the shaft.

Fig. 11.—Private P., four months after pegging. An ivory peg 6 by ½ inches was used. This peg is still in place, six months after the operation. The wound healed by first intention. Note that at both ends of the peg erosion and absorption are taking place.

Major Pearson's contention that his caliper grasps the bone without piercing it appears to me quite incredible. The bone is often soft and atrophic and the sharp points must go through the shell of bone before they can stand the strain of a 15 pound pull.

The transfixion of the tibial crest seems to me to be the safe alternative to the transfixion of the femur. It goes through nothing but skin, fascia and bone; it needs only a ⅛ inch pin; it concerns very dense bone; it can be left in place for four months, and if sepsis occurs from its seton action, it can, as a last resort, be cured by a V shaped incision of the crest of the tibia in front of the transfixion hole. It exerts traction on the thigh by pulling on the actual bony insertion of the great thigh muscles.

The two criticisms of the tibial transfixion which are fairly urged are, that it may strain the knee-joint and that it interferes with the exercise of the knee.

With regard to the strain on the knee ligaments: if only sufficient weight is used to cause correct length of the leg, then this force is expended in stretching the thigh muscles, and there is no overplus to injure the knee ligaments. If more force is used than the thigh muscles require then this will be indicated by over-extension of the leg and should be met by a suitable reduction of the weight. This argument holds good only in the case of recent fractures in which the extension force has only the muscle traction to overcome. It does not apply in the case of old fractures in which fibrous or callus union has to be overcome. In all old fractures of the femur or dislocation of the hip, I use, therefore, transfixion of the femur by a 3/16 inch pin and a 40 pound weight. The weight is reduced as soon as full length is reached and the pin is removed within three weeks, being then replaced by other methods; for example, plaster or tibial transfixion. But in all recent femur fractures, I use tibial transfixion with 15 pounds extension, reduced to 10 pounds within about one week.

THE VITAL PRINCIPLES OF FRACTURE REPAIR AND THEIR MECHANICAL CONTROL — THE PREVENTION OF DEFORMITY

The repair of fractures is by means of tissue which is soft at first and becomes hard only by slow degrees. Under adverse circumstances; for example, certain types of sepsis and loss of bone, the callus may remain soft for a very long period, and if a static or muscular force is constantly tending to bend the alinement, deformity will certainly result unless means are taken to prevent it. The best example of plastic callus, allowing deformity, is seen in fractures of the upper end of the femur where external angulation will inevitably occur after correct union has taken place in the absence of some external strut.

Fig. 14.—Lieutenant T., twelve months after plating operation: there is a well marked false joint with great eburnation of both ends of the bone.

Fig. 15.—Lieutenant T., two weeks after the femur has been bolted by two 3/16-inch bolts.

This is seen in an extreme grade in Figure 1 where a femur is shown angulated to such a degree that more than four inches shortening was produced. Such late or secondary displacement may take place as long as six or nine months after injury and several months

after union of the fracture. It is not easy to prevent this deformity by any of the ordinary appliances, for example, a Liston's long splint of plaster of Paris, without such prolonged immobilization as will make imminent a high degree of atrophy of the muscles and fixation of the joints. A walking caliper splint will not entirely prevent it.

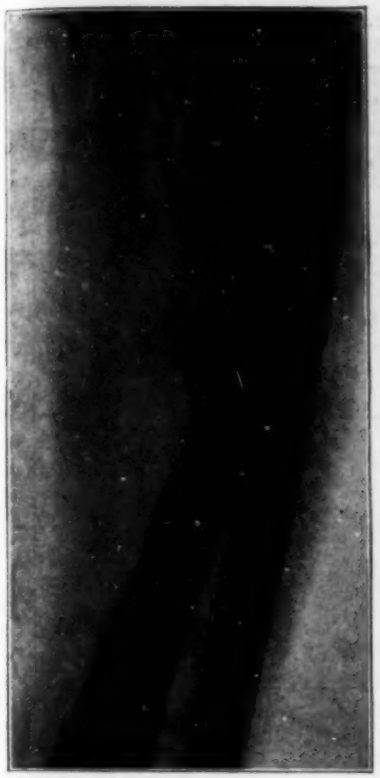

Fig. 21.—Private X.; bone graft for gap fracture of radius; gap at junction of upper and middle thirds of radius; typical loss of supination.

Fig. 22.—Private X., after bone grafting; tibial bone graft with double peg-ends; lower end driven into distal fragment; upper end forced into proximal fragment after distraction. Note how the graft has restored the "bucket handle" shape to the radius.

Provided that correct alinement has once been attained by proper extension, the adduction deformity can be prevented by the use of the outside metal splint shown in Figure 2. It is essentially a straight steel band reaching from the crest of the ilium to the condyles and attached by broad bands to the pelvis above and to the lower end of the thigh below. It can be used as an ambulatory appliance and it does not immobilize either the hip or the knee.

THE NECESSITY FOR ACTUAL APPOSITION OF BROKEN FRAGMENTS IN ORDER TO OBTAIN UNION OF A FRACTURE

The commonest cause of nonunion of fractures, apart from gross loss of substance, is a want of contact between the fragments, either from incorrect alinement or the interposition of the soft parts. This is very common at the upper end of the femur, especially when the leg has been put up with a straight hip and knee. The short upper fragment tilts forward whilst the shaft falls back. This want of apposition is frequently overlooked at the time when it could readily be corrected, because only anteroposterior roentgenograms are used. Only a stereoscopic or lateral view shows the upper fragment is far in front of the lower.

When such an ununited fracture is presented for treatment after nine or twelve months, the problem is a difficult one, because, not only are the tissues densely tied by scar tissue, but the bone ends, especially the upper, are much atrophied and will not hold any screws.

Figures 4, 5 and 6 illustrate an operation which I have adopted for such a condition of nonunion. The seat of fracture is exposed by an external incision, and the ragged ends of the bone, together with the intervening scar tissue, are cut away. The medullary cavity is opened up in both fragments by a ½ inch twist drill, and this boring in the case of the upper portion of the femur is produced through the great trochanter until the tip of the drill can be felt in the gluteal region, when it is exposed through a second incision. An ivory peg is then introduced into the upper fragment until its pointed end has almost disappeared and its upper end can be felt in the tissues of the buttock. The broken bone is brought into line, and by means of a metal lever fitted over the upper end of the peg, the latter is driven down into the shaft of the bone. Figures 10 and 11 illustrate a case in which this operation was successfully employed. In the first a metal cylinder was used and was removed after eight weeks. In the second an ivory peg was employed as above described and is still (after six months) in situ where the roentgen ray shows that it is beginning to undergo absorption.

Actual apposition of recently cut bone surfaces, together with mechanically efficient fixation, is necessary for the successful operative treatment of fractures, and this applies in particular to fractures of old standing in which reparative tissue is very indolent.

Fig. 23.—Private C.; ununited fracture of midshaft of radius; there had been fracture of the radius with loss of about 1 inch twelve months before; the ulna had been shortened so as to bring the ends of the radius into contact.

Fig. 24.—Private C.; bone graft for ununited fracture of radius. The sclerosed atrophic ends of the bone were cut away and replaced by a tibial graft with double peg-ends.

It is the want of apprehension of these two ideas of accurate apposition and efficient fixation which accounts for many failures of plating operations and I give two examples of these in Figures 12 and 13. In the former a short plate is attached by four screws only to a fractured humerus and one of the screws does not grip any dense bone at all. There is a gap between the bone ends and the plate serves rather to hold the bones apart than to unite them. This plate had to be removed after a sharp recrudescence of sepsis and the patient is awaiting further operation. Figure 13 shows a fracture of the shaft of the femur on to which a large gold plate has been attached by encircling strands of kangaroo tendon. Again failure resulted and nine months after removal of the plate the condition of the bone is seen. In Figure 14 is shown a case in which a well marked false joint had formed between the densely eburnated bone ends. The sequel to this last case (Fig. 15) illustrates what I mean by an operation which produces close apposition of newly cut bone surfaces and secure fixation. The ends of the bone were obliquely sawn and their dense substance drilled by an ⅛ inch drill in many places until both cut surfaces were freely oozing blood. They were

Fig. 26.—Private T., periosteum in fracture repair, four months after fracture of femur. The limb had been kept on a Thomas splint, three months after wounding. The sequestrums were removed, but adequate extension was not maintained. Note the festoons of periosteal callus formed by the comminuted fragments before removal.

Fig. 27.—Private Th., periosteum in fracture repair; fractured femur; Thomas splint three months after wound; sequestrums have been removed, but extension has been maintained; sheath of external periosteal callus holding fragments in position; only ½ inch shortening.

Fig. 28.—Lieutenant H.; periosteum in fracture repair; fractured humerus, showing the same joints as Figure 27; namely, formation of periosteal callus, when comminuted fragments were retained for a sufficient period.

Fig. 30.—Private R.; periosteum in bone repair; gap fracture of radius repaired by two flat pieces of tibia covered by their own periosteum and bolted together; seen "en face."

Fig. 32.—Private R.; after three months. Note central necrosis in one graft and abundant epiosteal new bone.

Fig. 34.—Private R.; after nine months; almost complete reformation of the shaft of the bone after grafting.

then united by two iron bolts 3/16 inch thick (as shown in Figure 15).

SOME MECHANICAL PRINCIPLES IN BONE GRAFTING

A vast quantity has been written about the vital principles of bone grafting and osteogenesis, but there is a mechanical aspect of this question which has been comparatively neglected.

These three mechanical principles; namely, extensive accurate contact of the graft to the bed; efficient fixation, and correction of the deformity, can be carried out only by very careful study and preparation for each individual patient. I have chosen a series of cases of gap fractures of the radius because they illustrate the points so well. Figures 21 to 24 show various types of this fracture, affecting the lower, middle and upper ends of the bone. For the moment, I will dwell only on the mechanical factors in the operation, reserving important matters relating to vitality for a separate section.

In the first place, then, it is essential to make a clean cut of the fragmented or withered ends of the broken bone and this should be done not according to rule and measure but until the cut surface bleeds well. The average amounts removed can be judged by comparison of Figures 21 and 22 with 23 and 24.

A graft is cut from the anterior surface including the crest of the tibia and this graft should be approximately of the same thickness as the bone which it is to replace. We are quite familiar with the fact that repair of wounds is greatly facilitated by an even contact of level surfaces. An ulcer of the leg will not epithelize until its base is level with its edges. So with bones: if the surface of the graft lies even with that of its bed, easily and quickly do the two become one. The graft is then cut at each end, by means of a special doweling tool and file, into pegs which fit the cavities of the fragments which they are to unite. This leaves a central thick part of the graft with two peg ends. The central part must be accurately made to measure, as it determines the ultimate length of the mended bone.

The fitting of the graft into its bed may be made in various ways, the simplest being to drive one peg end into one fragment and then to slip the other fragment over the other peg-end of the graft by forcible distraction (Fig. 22). Or, one end may be driven into place and the other fitted by first splitting the corresponding bed fragment and then wiring it together (Fig. 24).

It will be noted that when this operation is complete three things have been accomplished:

1. The deformity is corrected as far as this is possible.
2. The graft is fixed in such a way that it is actually gripped by the living tissues, which in no way depends on sutures, screws or plates.
3. The continuity and the full strength of the bone is restored and then the only call for osteogenesis is to make good the line of contact.

THE PERIOSTEUM IN FRACTURE REPAIR

Faith in the periosteum as a bone maker dies very hard and many men have lost their limbs or been left with nonunion or deformity as a sacrifice to this delusion. And yet, although the evidence of the merely passive and vascular functions of the periosteum appears to us so convincing, to those who are prejudiced by the older teaching it is easily misunderstood.

In the case of a comminuted fracture of the shaft of a long bone in an adult, if all the fragments are taken out from one complete section soon after the injury, then the gap so left will be permanent, no new bone being laid down from the periosteum or thrown out by the fragments. But it will at once be protested that in many cases a gap left by the removal of fragments is often filled up well and quickly and that this is positive evidence of osteogenesis from periosteum. All such cases when examined fall under two categories: either the removal of fragments has been delayed for several weeks or months, or else the removal has only been partial, a more or less ample bridge being left across the gap. The latter kind of case is so obvious that it is hardly necessary to give special illustration of it. But the former is not so generally understood and I will give three cases in which it is well shown.

Figure 26 shows the shaft of a femur from which all the loose fragments were removed three months after the injury. Festoons of periosteum are seen outlined by the new bone bridging the gap. Unfortunately the periosteal, or as I should prefer to call it, the epiosteal new bone, was scanty and weak in this case and deformity occurred because adequate extension was not maintained long enough.

Figures 27 and 28 are from a femur and a humerus in which the removal of the fragments was delayed for several months after injury and in each case there is enough epiosteal new bone or external callus to maintain the full length and the correct alinement of the shaft.

Contrasting now the absence of new bone in cases where a complete section has been removed soon after injury with its more or less abundant formation in Figures 26, 27 and 28, what is the explanation? Firstly, that the periosteum had nothing to do with it is shown by the fact that this membrane was equally preserved in all. But in the one case the bone fragments were removed at once and in the others they were left long enough to pour out their osteoblasts into the surrounding matrix of vascular tissues.

Whether this explanation is accepted or not, the facts are of paramount importance and lead to the conclusion that in comminuted fractures, even though septic, attached fragments must be preserved, for a time, at least, until an external callus has been laid down.

Another practical point arises in the case of a gap in a bone made by primary removal of fragments. Should extension be kept up so as to maintain full length in the hope that the gap is to be filled? Even if the above theoretical suggestions are accepted, there must always arise a doubt whether the fragments may have been sufficiently preserved to form a bridge, or left long enough to form a callus involucrum.

I think the answer to this question is a simple one. Full extension should be kept up for from four to six weeks from the date of the removal of the fragments, and then, if regeneration is taking place, it will be demonstrated, both by the roentgenogram and by the firm feeling imparted to the limb. If after six weeks there is no such evidence, then it is vain to hope for osteogenesis and the choice will have to be made between allowing the ends of the bone to come together by relaxing the extension, and waiting for an ultimate bone graft.

THE IMPORTANCE OF THE PERIOSTEUM IN BONE GRAFTING

It must by no means be assumed from the foregoing remarks that the periosteum is regarded as a negligible structure. In bone-grafting it is important and success may depend on its proper use.

All bone grafts, except those which are used as pegs or nails, should be cut with an ample provision of periosteum. In the series of cases illustrated by Figures 19 to 24, for example, each graft had a strip of connective tissue 2½ inches wide, cut from the leg with the bone; of this, about half is natural tibial periosteum, and the rest, the contiguous fascia covering the tibialis anticus muscle.

This tissue is scraped off the ends which are cut into pegs. That which remains attached to the body of the graft is sewn around it so as to give it a complete envelope of its own, and the free ends are drawn like petticoats over the lines of junction between the graft and its bed.

The idea of this technic is, that the periosteum is in vascular continuity with the graft, that its wide surface rapidly establishes vascular continuity with the tissues by which it is surrounded and that it then serves quickly to act as a vascular intermediary between the graft and its bed.

Figures 30 to 34 give good evidence of the laying down of epiosteal new bone by the graft and the manifestation by it of essential vitality. A complete gap of nearly 2 inches existed in the radius. A double flat graft, each part being covered by periosteum, was bolted into this gap.

Figure 32 shows the condition after three months. A copious epiosteal new bone has been laid down and one of the pieces of which the graft consists shows a well marked central necrosis. Even if the new bone be regarded as an ingrowth from the bed rather than an outgrowth from the graft, the fact of the central necrosis affords incontrovertible evidence that the graft itself is alive with independent vitality. Figure 34 shows the final regeneration of this bone which gave the patient quite perfect use of his forearm and hand.

In conclusion may I summarize and link together these apparently disconnected remarks, by urging these two principles: First, that advance in the treatment of fractures is to be looked for on the lines of specialized team work, and second, that fracture repair involves mechanical as well as physiologic principles, and whether it is the education of the surgeon, the design or application of a splint, or the cutting and fitting of a bone graft, mechanics and surgery must go together, so that correct and efficient mechanism is always a part of surgical technic.

Caries of the Teeth in Denmark.—A committee was appointed by the state last year in Denmark to propose ways and means to combat caries of the teeth. The committee included a leading dentist, two physicians and the health insurance inspector. The report has just been published, and it states that scarcely 2 per cent. of the children have sound teeth, and in adults fully 40 per cent. of all the teeth are affected with caries. The report advocates propaganda to promote the care of the teeth and to teach the evils of caries, also the foundation of school and community dental clinics, and inclusion of dentistry in the provisions of health insurance. The expense was calculated at 1,500,000 kronen to start with, and 2,500,000 for annual upkeep, half of which should be assumed by the state. The report added that there might not be enough dentists to supply the demand that these provisions would create.

TREATMENT OF GUNSHOT FRACTURES*

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The limits imposed on this paper demand the briefest statement of facts and the omission of theory.

A projectile, when producing a fracture, passes through the soft parts and strikes the bone:

1. It may then be arrested but deliver enough force to break the bone. Such fractures resemble the ordinary fracture produced by direct force. In such a case no foreign material is carried into the bone or marrow cavity, and such fractures are termed fractures by contact.

2. It may enter the bone and lodge, and produce either a hole (partial fracture) or a complete fracture with more or less shattering. Such fractures always contain foreign material. They are termed penetrating fractures.

3. It may pass through the bone and produce simply a hole or extensive shattering and comminution. In many instances, the velocity of the projectile is imparted to the fragments, which then lacerate or tear completely through the soft tissue on the opposite side of the limb. These fractures are termed perforating, and may be incomplete or complete, and may be accompanied by an extensive loss of substance. They may or may not contain foreign materials. Usually portions of the projectile remain in the wound, and frequently fragments of clothing.

On account of the differences in structure, the effects of the projectiles on the epiphyses and diaphyses differ greatly.

Because of the dense structure of the diaphyses and the violent vibration set up by the impact of the projectile, extensive fissuring and traumatism remote from the point of contact may occur, as evidenced by hemarthrosis of the contiguous articulations. On the other hand, the spongy, elastic structure of the epiphyses absorbs rather than diffuses the energy of the projectile, and consequently the lesions are generally restricted to the epiphysis itself. However, even in the case of small penetrating wounds, multiple or diffuse hemorrhagic areas may occur, leading to disseminated infection and necrosis.

It was found during the war that operation to prevent or eliminate infection was not indicated in fractures caused by rifle balls, when the wounds of entrance and exit were punctate. Operation was indicated, on the other hand, in all fractures caused by shell or grenade fragments. In fractures caused by shrapnel balls, operation was indicated only if good technic was possible, as these wounds frequently escaped infection.

NATURE OF OPERATION AND TREATMENT

In regard to the extent and nature of the operation that should be performed, the consensus of opinion at the end of the war was that it should be limited in extent to that necessary to eliminate contamination and remove actually detached fragments.

Primary and delayed primary suture of the accompanying wounds of the soft parts were successfully carried out by experienced and skilful surgeons when operating under favorable conditions, and when the wounded could be retained under their observation.

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As would be expected, the results in fractures by contact were much more favorable than in those by penetration or perforation.

When infection was present or anticipated, free dependent drainage was found to be imperative.

In regard to the transport of fractures, I shall say nothing other than that traction is absolutely necessary, and that the Thomas leg and arm splints are not only sufficient, but are also the most efficient splints for transport that we have. Every civil ambulance should be equipped with them.

In regard to definitive treatment, by which I mean the treatment until consolidation and the return of function are accomplished, that of suspension and traction by counterweights and weights acting by means of pulleys, as commenced in 1914 in my service at Neuilly, and developed later on, not only in my hospitals, but also in others in the French, English and American armies, has, I believe, been the most satisfactory and given the quickest and best results.

The application of this treatment to the arm and lower extremity will appear in greater detail in the discussion by Drs. M. K. Smith and R. T. Knight, and therefore I shall confine myself to a statement of the principles.

These principles are based on the following facts:

1. In every fracture of a long bone, the proximal fragment tends to occupy a certain position, which is determined by the muscles attached to the fragment. The forces produced by these muscles may be termed intrinsic.

2. This position, which may be designated as the position of election or rest, is readily modified up to certain limits by any slight extrinsic force, that is, one operating from without.

3. Conversely, if a slight restraint is supplied, considerable motion at the proximal articulation may occur without there being any change in the absolute position occupied by the fragment.

4. Traction on the distal fragment not only prevents overriding and shortening, but when applied in the direction of the axis of the proximal fragment, when in the position of election or rest, also tends to prevent harmful angulation at the site of the fracture as a consequence of the restraining action of the sheath of the stretched muscles about the proximal fragment.

5. Proper counterbalanced suspension, by allowing the limb to follow the body, permits a considerable latitude of movement of the latter in bed without deranging the relative position of the fragments.

6. Traction, in order to accommodate itself to the position of the patient (unless the traction is contained within the splint), must be made by a weight and cord running on a pulley; and the pulley should be as far as possible from the point at which traction is made, so as not to limit the swinging of the limb.

7. The lack of fixation in permitting a certain amount of motion between the fragments does not delay union; on the contrary, consolidation appears to be more rapid, probably because of better nutrition.

8. In fractures of the humerus and femur, in both of which fixation of the proximal fragment is impossible, the limb being free to follow the movements of the trunk, no violent angulating strains occur at the site of fracture, and commencing union rapidly affords the slight restraint necessary to maintain the fragments in position.

9. With traction and suspension properly applied, it is possible to move all of the joints of the fractured limb throughout the treatment, no matter which bone is fractured.

Some of the foregoing assertions are evident, and the others have been proved by observation in the treatment of hundreds of fractures of each of the long bones.

The principles of the treatment are: to avoid actual fixation; to employ traction to its fullest possibilities in overcoming deformity, and to use suspension so as to afford the greatest freedom of movement, both of the trunk and of the joints. The chief and underlying principle is conservation of function.

The fullest application of the principles is in the treatment of fracture of the humerus, in which no splint is used and in which, consequently, there is no lateral support. The best results, moreover, have been obtained in these cases.

In fractures of the forearm and more particularly of the leg, the bars of the suspended splint afford lateral restraint; but in no case are circular bandages employed, the splint and underlying slings acting simply as a cradle.

In certain fractures of the femur, modification of the supports and of the axis of traction is necessary. For instance, in many fractures of the lower one third, the axis of traction must be lower than the axis of the proximal fragment, and a support must be applied below (that is, behind) the distal fragment.

When possible, in all fractures of the femur, skeletal traction, preferably with Ransohoff's tongs, is made directly on the lower fragment, and in some cases of fracture of the lower one third, the tongs may be used to lift the distal fragment into position by elevating the axis of traction.

The Thomas is the most useful and practical of all splints for fractures of the thigh and leg, but it must be used intelligently. For some cases the half ring modification or the Hodgen splint are preferable.

I do not believe that the best results are obtained by using the full Thomas principle of traction to the foot of the splint. Yet there is a distinct advantage, when using glued traction bands, to buckle them to the foot of the splint, and then attach the traction to the splint, or, better still, to use fractional traction on the splint. This is accomplished by attaching the traction cord to the foot of the splint and then reeving it through a pulley or pulleys on a spreader to which the traction bands are fastened. By varying the arrangement and number of pulleys, the proximal thrust of the splint may be made one half or one quarter of the entire traction on the limb.

In fractures of the upper part of the femur, unless the ring of the Thomas splint is an accurate fit and bears on the ischium, the proximal thrust of the splint will produce abduction of the proximal fragment. This cannot be overcome by a band alone, passing about the upper thigh and fastened to the inner bar of the splint, for it will simply constrict the thigh; but, as I believe Dr. Knight will demonstrate, a weight attached by a cord to the inner bar and pulling toward the opposite thigh will overcome the difficulty.

ADVANCE IN TREATMENT

It is impossible to make a statistical comparison of end-results because it has been impossible to keep more than a few patients under treatment until convales-

cence; but as far as gunshot fractures are concerned, there is no comparison possible between the results obtained at the end of the war and those obtained in the early part of the war by the old methods.

A sufficient number of ordinary civil fractures have been treated to warrant the statement that this treatment possesses similar advantages in the treatment of these fractures.

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STATISTICAL SUMMARY OF WAR FRACTURES *

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Early in 1917, in the *British Journal of Surgery*, an experienced surgeon in the British Army stated that after two and one-half years of war, surgical opinion as to the most satisfactory form of treatment for gunshot fractures was by no means unanimous. After two years' further experience, during which an enormous number of fractures have been treated by various methods, there are many surgeons who still hold divergent views. The majority of surgeons who have had a large experience with fractures have already had sufficient evidence as to the indisputable value of standard methods. As there is such a large number of surgeons who still rely on discredited methods, however, I hoped to be able to present at this meeting additional evidence (from our own records) sufficient to convince these surgeons that the standard methods—which have already given so much better results than their methods—must be used in the future. That there is need for improvement is shown by the fact that among the men examined for the last draft there were found to be 21,338 suffering from fractures with malunion; in this group were 1,110 from Ohio, 1,358 from Illinois, 1,618 from Pennsylvania, and 1,752 from New York.

HOSPITAL RECORDS

The educational value of these fracture statistics to our profession and to the public is just being taught, and when fully understood and appreciated it must improve the efficacy of our treatment. When cases of fracture are followed up, it is found that ideal functional results are not usually secured. It is only by studying the end-results that positive conclusions can be formed as to which method of treatment is the best. As nearly 60 per cent. of the fractures occurred before November 11, eight months ago, it was thought that a considerable number would have been cured and the patients discharged or restored to duty by this date, but this has not occurred. On the statistical slips for fractures which were sent to all hospitals, the answers given in reply to the question, "When can he be discharged?" were thirty days, forty, fifty, etc. Of those of whom it was stated that they would be discharged before June, less than 15 per cent. were actually discharged.

These few cases would not furnish sufficient evidence for our purpose, and, furthermore, they are not now available for study on account of the inadequate clerical force in the office of the sick and wounded; at just the time that this force should be available, it has been reduced nearly 50 per cent. In England, the National Research Society has taken charge of all the hospital records and will classify them for the purpose of an exhaustive study. It is hoped that the War Department will take such measures as will render our valuable records available to our profession, for they will constitute a wonderful mine for research and information. As it was desired to obtain accurate data regarding all classes of fracture of long bones, a circular letter, No. 117, was sent, March 4, 1919, to all hospitals, with an inclosed blank form similar to the one used in England, France and by the American Surgical Association. This letter directed that as soon as a patient with a fracture of a long bone entered the hospital, the blank must be filled out at once by a competent officer and sent to the Division of Surgery. March 1, 1919, there were reported 5,131 fractures scattered throughout sixty-five different hospitals; 3,832 were reported as "cases in which healing has occurred or will occur without further operation and with satisfactory function." Six hundred and twenty-six were reported requiring an operation for osteomyelitis, and 673 for nonunion or malunion.

DISADVANTAGES FROM LACK OF EQUIPMENT

Many of these hospitals were not suited for the treatment of serious fractures, being neither properly equipped nor supplied with a competent, qualified personnel. In order, therefore, to afford the serious fractures of the long bones the benefit of special professional skill, the following fifteen specially equipped and qualified hospitals were designated for the treatment of fractures of the long bones—especially those of the lower extremity: Letterman; Walter Reed; Sam Houston, and General Hospitals 2, 3, 6, 10, 24, 26, 28, 29, 31, 36, 38 and 41. It was urgently recommended that all such cases, when practicable, be transferred from various nonequipped to special equipped hospitals. This request was denied and the transfer restricted to such new cases as should arrive from overseas. In the case of peripheral nerves, the request that all cases be transferred to eleven special hospitals was approved, but refused for fractures, as it was believed the average surgeon could treat them satisfactorily. Experience has demonstrated that such is not the case.

COMPLICATIONS OF OSTEOMYELITIS

Osteomyelitis has been the most serious complication of fractures, and has occurred in at least about 50 per cent. of the cases. In March, the hospital reports, signed by the chiefs of surgical service, indicated that there were 652 cases under treatment. A study of the operating reports, 55K, for March revealed the unreliability of these last figures, disclosing that there had been performed 1,606 operations for osteomyelitis. Again, in April, 740 cases were reported, although the operating rooms reported 1,535 operations. In May, there were 650 cases of osteomyelitis with 1,500 operations.

Since Jan. 1, 1919, there have been 6,921 operations for osteomyelitis. Considering the number of cases reported, these figures seemed unduly large, for it seemed as if most patients were having a series of operations. It has required much time to secure more detailed information revealing that there have been at least 2,124 patients suffering from osteomyelitis. These facts are given that surgeons may see the great difficulty that confronts one in the study of statistics unless the primary records are accurate. Several months'

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experience in the Surgeon-General's Office has shown that a very large number of otherwise competent surgeons have failed to appreciate the great value of accuracy in their records. Our records must be reliable if we are to secure real knowledge and learn from the experiences of others.

There have been reported 5,918 fractures (Table 1).

TABLE 1.—FRACTURES REPORTED*

	Femur	Tibia	Fibula	Tibia and Fibula	Humerus	Radius	Ulna	Radius and Ulna	Total
Fractures	1,214	1,121	466	652	1,278	528	375	284	5,918
Osteomyelitis	476	479	82	140	546	132	106	73	2,124

* The following statistics have been secured from the records of 1,575 femurs: right, 707; left, 737; upper third, 342; middle third, 535, and lower third, 385. Osteomyelitis, 694; not stated, 479; nonunion, 15. No shortening, 230; 1 cm., 115; 2 cm., 176; 3 cm., 128; 4 cm., 70; 5 cm., 85, and 6 cm., 78. Not stated in 603 cases.

There have been about eighty fractures in which Lane plates were applied and about 190 in which bone grafts were used. It is believed these numbers will be increased when more records are received.

MORTALITY, HEMORRHAGE AND AMPUTATION

The records for mortality, secondary hemorrhage and amputation are very incomplete. In this connection it may be well to quote the British records for 1914, 1915 and 1916. Four per cent. of the patients died in the field and 16 per cent. in casualty clearing stations, making 20 per cent. at the front; the mortality at the base hospitals in France and England was approximately 20 per cent., giving a total of 40 per cent. During 1917 and 1918, as a result of many improvements, this rate was reduced to less than 20 per cent. The statistics of Great Britain and the United States given in Table 2 are interesting.

TABLE 2.—EYESIGHT, HEAD, AND AMPUTATION CASES RELATING TO FRACTURES: STATISTICAL DATA OF GREAT BRITAIN AND THE UNITED STATES

	Great Britain		United States	
	No.	Per Cent.	No.	Per Cent.
Eyesight cases	11,547	2.6	2,090	4.0
Wounds and injuries to legs necessitating amputation	13,585	2.7	746	1.4
Wounds and injuries to arms necessitating amputation	6,600	1.4	1,868	3.6
Wounds and injuries to legs not necessitating amputation	59,691	12.0	8,497	16.0
Wounds and injuries to arms not necessitating amputation	43 055	8.8	3,637	6.9
Wounds and injuries to hands not necessitating amputation	20 610	4.3	1,961	3.7
Wounds and injuries to head	16,270	3.9	576	1.1

It is too early to give the end-results of fracture treatment. However, it may be useful to record some general impressions gained by observation at hospitals in France, England and United States.

TYPES OF SPLINTS

For transport of the patient from the field to the evacuation hospital or base hospital, the Thomas or Blake-Keller modification is unquestionably the best type of splint.

During the period of infection, for the lower extremity, the Thomas or Hodgen splint used with the Balkan frame, with extension by suspension and traction, has given the best results. For many fractures of the lower third of the femur, with backward displacement of the upper end of the lower fragment, no type of splint has proved so generally efficient as the caliper. In Germany, during 1914, 1915 and 1916 the Steinman pin was used extensively, more so than by the French or English. During 1917 and 1918 there has been a great increase everywhere in the use of the caliper.

For the humerus and the elbow, the Thomas arm splint suspended from a Balkan frame with efficient extension has been most satisfactory. In some cases the aeroplane splint is much more comfortable.

In very many cases in which the Thomas splint was employed, it was not properly applied, the so-called extension straps were very rarely found to be tight enough. These straps should be examined daily and kept constantly taut.

CAUSES OF POOR END-RESULTS

In a large majority of the hospitals measurements have been neglected. Seldom has a tape measure been accessible, and in 35 per cent. of the cases there has been no statement of any measurements. Tape measures are as essential as are thermometers. In those hospitals in which measurements have been omitted, the largest number of cases of marked shortening have occurred.

Roentgenograms have not been taken regularly, although the roentgenographic departments have been well equipped with apparatus and personnel, ready to cooperate with the surgeon. Many of the poor end-results have been due not to a lack of knowledge but to neglect to carry out in detail well recognized methods of treatment.

The average general surgeon has failed to devote the attention and consideration to the treatment of fractures which this important subject demands. The results obtained previously by inefficient methods are unsatisfactory, the young, able, alert surgeons who have had a good hospital experience will be given much of this important work in the future. There will be splendid opportunities in the great manufacturing industries, public service institutions, power plants and railroads.

BONE FISTULAS AFTER WAR WOUNDS*

PEDRO CHUTRO

BUENOS AIRES

The word "osteomyelitis," employed to designate the suppuration of bone after war wounds, seems to me incorrect; we should reserve this name for the very definite disease which we see in civil practice, and designate simply as "bone fistulas," the chronic suppurations of the bones resulting from a war wound.

The term osteomyelitis implies in itself an early treatment consisting in the incision of the periosteum, followed by the trephining of the bone, and the opening of a seat of infection to prevent its propagation; in the wounds of war, all this operation has been done by the projectile, and what one is to treat is a localized lesion with characteristics entirely different from those of true osteomyelitis. The term "bone fistula" is more proper to designate this obstinate lesion, which more resembles an infirmity than a disease.

Granted that the lesions of bone following war wounds are not the same as those of the osteomyelitis of civil practice, neither can their treatment be the same.

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CAUSES OF BONE FISTULA

Before explaining the general lines of treatment of bone fistulas, I will permit myself certain considerations as to the origin and the pathologic anatomy.

The bone fistula is established always as a consequence of an insufficient treatment of wounds, whether it be because one has performed an incomplete operation leaving metallic foreign bodies, fragments of clothing, or bone fragments which are transformed later into sequestrums, or whether one has not been able thoroughly to clean the wound, or has not been able to take the necessary steps to avoid secondary infection. The anatomic lesion is simply a limited osteitis, which easily becomes chronic.

It seems useless to me to speak today of the treatment of the wounds and of the means of avoiding fistulas; the important thing is to know how to treat them.

Certain rare cases heal after the extraction of the foreign bodies and the sequestrums overlooked at the primary operation; but the time elapsed since the armistice leaves little hope for these cures. Most of the cases of bone fistula have already, at this date, undergone several operations, and it is rare, today, to find foreign bodies or, perhaps, even sequestrums.

Among several hundred cases of bone fistulas which I have had occasion to treat, I have seen only certain rare instances in which the suppuration proceeded from a focus of infection in the external surface of the bone; the great majority presented a focus in the interior of the bone or of the callus, except in cases of the cranium and the scapula.

Two factors dominate all the process of the bone fistula: first, the presence of a cavity with rigid walls; second, the infection of this cavity.

Some examples of these cases will avoid a long description. A shell fragment entering the tibia causes a loss of substance which, after esquillectomy, extraction of the projectile and cleaning, will take the form of a real cavity in the interior of the bone. If the projectile has gone through the bone, one will have instead of a cavity a veritable tunnel, whose bony walls will never approximate. The mildest infection will suffice to create a focus of osteitis in this cavity or in this tunnel, realizing the conditions necessary for the establishment of a fistula.

Another type, very frequent in the wounds of the leg, is: fracture of the bones by a shell fragment; tearing of the interosseous membrane; esquillectomy; infection; suppuration; consolidation with a great callus which unites the four fragments, invading the interosseous space and having in its middle a bony cavity containing sequestrums, fungosities, etc.

In the femur the condition is observed still more frequently and may be given in outline here as: fracture by a shell fragment; esquillectomy; immobilization in an apparatus which generally does not cause coaptation of the fragments, and does not prevent the displacement backward of the inferior fragment; formation of a voluminous peripheral callus, with separation of the two bony extremities within its interior by a quantity of interposed tissue; some sequestrums, and a cavity, suppurating, full of fungosities.

To summarize, it is the cavity and the infection of the cavity which dominate the process, the one being essential to the other, and the removal of only one of these factors is not sufficient to obtain healing.

CAVITIES AND FUNGOSITIES

Again, in the body, every real cavity must have a communication with the exterior, and the fistula is in reality only the exit of these bone cavities.

This said, it remains for us to observe certain peculiarities of these cavities. Bone is a specialized tissue whose evolution is terminated, and which by itself is incapable of furnishing bone to fill the cavity. It is equally incapable of giving healthy granulations; unhealthy bone only produces fungosities. These fungosities are the product of the infection of the wall of the suppurating cavity, which provokes the necrosis of little bony lamellae, around each of which grows a granulation. Sometimes these fungosities are flat and only line the wall of the bony cavity; in other cases they are exuberant and apparently fill all the cavity; but it is always easy to pass a probe between the fungosities and to feel denuded bone in the depth.

Some cases come to eliminate all the little sequestrums, and after months or years the fungosities sclerose, giving a cure of variable duration; more frequently this spontaneous cure does not take place. Bone is a tissue which defends itself poorly against infection, and once infected it reacts in a peculiar manner, seeking to limit the process by the formation of new bone around the focus, that is to say, by establishing a veritable blockade around the infected zone, but without succeeding in cicatrizing the lesion.

For a long time we have sought to establish the degree of depth of the infection of bone, and we have arrived at the conclusion that the infection is very superficial. This fact is as valuable for cases in which the patients have undergone one or two operations as for those who have undergone twenty.

The bacterial flora is of the richest, and one finds all the aerobic and anaerobic organisms which inhabit these cavities communicating with the exterior.

BONE FISTULA DISTINGUISHED FROM OSTEOMYELITIS

This lesion is entirely different from the ordinary osteomylitis which commences by an infection in the metaphysis; and it follows its evolution, whether toward the periosteum through the haversian canals, or toward the marrow cavity through the spongy tissue.

Cases of bony fistula present little of the phenomena of infection because the cavity, communicating with the exterior, has little retention. Again, all the lymphatics around the focus are blocked, and in consequence there is no absorption of the septic products; but a slight intervention, a dressing made a little awkwardly, suffices to abolish this lymphatic blockade, and one sees immediately the appearance of fever and of the phenomena of intoxication by absorption of septic products.

TREATMENT

The treatment of bone fistulas is variable, from a technical point of view, according to the bone involved, and in each bone, according to whether the lesion is located in the diaphysis or in the epiphysis. But in spite of the variety of the treatment, it always obeys the general principles which I shall endeavor to set forth in an exact manner.

In the first place, it is necessary to place the incisions in appropriate regions, even disregarding the site of the fistula, in order to avoid certain difficulties later. Thus, a straight incision on the anterolateral aspect of the tibia causes a retraction of the skin which will retard cicatrization enormously. An incision placed

on the anterior aspect of the thigh will give rise to serious functional trouble on the part of the quadriceps; and, if the wound heals, there will remain a deeply depressed scar, adherent to the bone, which easily ulcerates. The incision placed behind the trochanter causes difficulty in the function of the gluteus, and sometimes phenomena of compression of the sciatic. The same is true for the upper extremity.

The intervention with the bone will consist in the suppression of the bony cavity, the principal cause of the fistula. To effect the intervention, it is necessary completely to resect one of the walls of the cavity and, by preference, that which is located far from important structures such as the nerves, but near muscular masses. There will remain only half of the bony cavity in the form of a simple depression; that part which is infected will be relieved of its fungosities and its sequestrums by a curettage, gentle but careful.

The operation is finished by details proper to each segment of the limb, which will be described in chapters of surgical technic.

The cicatrization of bone is brought about by granulations, but the granulations will not come from the bone; they will come from the depth toward the periphery, and will grow from the neighboring muscles. These granulations will little by little cover the vivified surface of the bone, until they cover it entirely, and from that moment the healing of the lesion is assured.

To arrive at this result, it is necessary that the vivified surface of the bone be maintained sterile during several weeks, that is to say, during the time necessary for the granulation. It is here that the treatment of Carrel-Dakin finds its application. The abundant and prolonged irrigation of the wound during several weeks permits it to be maintained clean.

We do, therefore, the contrary of that which others have done, that is, instead of seeking to sterilize the wound before interfering, we do the first operation and then we irrigate to maintain the result of the operation and to favor healing. If the operation has not been satisfactory, the irrigation does not augment the chances of cure.

We never employ the Esmarch bandage. We secure most careful hemostasis of the soft parts, and we commence the irrigation immediately after the operation.

We do not tampon, because a compress left for twenty-four hours is the best medium for the reinfection of the bone which has just been cleaned. Infection of bone takes place in a few hours.

The tibia, so accessible to the sight, has permitted us to study the different phases of the cicatrization. Certain cases in which the wounds were not irrigated until several hours after the operation presented later little bony surfaces refusing to receive the granulations coming from the muscles, and we arrived at the following interpretation: A clot having adhered to the bone, the Dakin solution maintained sterile the surface of the clot, but not the part of the bone to which the clot adhered. We have found that the fluid commences to act when the clot has been detached, that is to say, at the end of five or six days, when the bony surface has been partly infected. That is the reason for which we commence the irrigation immediately.

When the bony surface is completely covered by granulations, one can close the wound secondarily; but this procedure does not present great advantages, and it has, rather, some disadvantages. In fact, the scar adheres too closely to the bone, and this has no pad of protection. We prefer to continue the irrigation until complete healing is accomplished, with the aim of obtaining a cicatrix that is more supple, and especially to have a greater quantity of connective tissue separating the skin from the bone.

When the wound is healed, we perform, under local anesthesia, the complete removal of the cutaneous scar and the most complete reconstruction possible of all the anatomic planes.

After many attempts, we have come to establish different types of operations which have permitted us to obtain very satisfactory results. We have operated on several hundreds of these fistulas. The first cases were failures; but in the last series of 329 cases, all the wounds of the humerus have healed, as have also wounds of the ilium; five femurs and three tibias have not healed.

All the patients, before entering Buffon, had already been operated on between four and twenty-three times, and treated with the whole series of antiseptics and pastes that have been invented during the war.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GROVES, BLAKE, WALKER AND CHUTRO

DR. JOSEPH R. EASTMAN, Indianapolis: One can, as a rule, by the external use of metal splints accomplish all that is attained by the employment of the somewhat complex devices presented. A Thomas metal splint with a knee joint in it and with a catch which will prevent hyperextension of the knee can be so applied as to allow of passive movement of the knee joint and at the same time provide extension and counterextension. With such a modified Thomas splint the entire lower extremity can be supported precisely and securely with straps of rubber or flannel so that lateral, longitudinal or angular displacement is corrected and alignment of the fragments is attained in nearly every instance. Such a knee joint Thomas splint allows of movement of the patient in bed, from one bed to another and admits of ambulant treatment of the fracture with so little inconvenience that one surgeon can take care of many patients. A long screw at the foot regulates the degree of extension. The ring at the upper end of the splint is attached to short bars which slide on the long internal and external bars of the splint so that the ring may be turned half way around and applied either to the left or the right lower extremity. The arm sling of Robert Jones, of Liverpool, is an almost ideal device for the treatment of gunshot fractures of the humerus or forearm. With it one can secure any degree of extension of the arm and forearm. I have modified this splint somewhat by adding a rachet device which allows of any degree of abduction of the humerus; a point of some importance, since if ankylosis occurs at the shoulder joint the greatest arc of mobility is secured, if the ankylosis occurs with the humerus in abduction. The arm and forearm rest on a right angle wire splint supported by a wire brace which moves at the free end on the rachet of a rectangular wire frame resting on the side of the chest with a ring surrounding the shoulder at the upper end. If there is great difficulty in keeping bone fragments in alignment in a case of compound fracture with great laceration, I can see no harm in laying on a Lane plate with the understanding that the plate is to be taken off. In war fractures there is often such laceration of the soft parts that no incision is necessary and the plate is applied with the greatest ease. After a few weeks when the soft tissues have become "set" the plate is easily removed and though there be no union, alignment has been established and is thereafter easily maintained, which it would have been difficult to accomplish otherwise. Extension and counterextension are then sufficient to

hold the fragments in place while bony union is being established. Of course, in an infected fracture the intramedullary bone graft cannot be used and external splints may fail to maintain alignment. It should be remembered that the Lane plate can be removed with the greatest ease if infection should require the removal of the internal splint, whereas, it is difficult to remove an intramedullary bone peg. Too great caution cannot be observed in the use of bone pegs following war fractures, since even months may elapse after complete external healing has occurred and yet the trauma incident to an open operation will reawaken a dormant infection. Hence the prudence of relying on osteotomy with extension and counterextension more often than is common practice in the correction of old badly healed war fractures. I have used the Groves wire cradle splint for fractures of the femur many times. I do not believe there is a better femur fracture splint for use in war or civil practice. It might be described as a Hodgen splint supported below by posts instead of being suspended from above. The surgeon can work over or under it. It admits of easy access to every part of the leg or thigh while extension is being carried on. When the Steinmann pin or any sort of ice tongs device is used this wire cradle splint is especially satisfactory. The weight and pulley are attached to the splint itself, maintaining pull in any direction with mathematical accuracy. I believe the Groves cradle splint to be one of the most valuable developments of war surgery.

Dr. Morris K. Smith, New York: The treatment of gunshot fractures of the humerus, as carried out on the service of Colonel Blake at the American Red Cross Military Hospital No. 2 in Paris, permits the maintenance of joint and muscle function. Points which I wish to emphasize particularly are: (1) the method permits of control by the surgeon of the position of the fragments; (2) union takes place rapidly; (3) disability is reduced to a minimum by mobilization of joints and exercise of muscles. Records are particularly difficult to keep under the condition of active war surgery. However, in the case of fifteen American patients the time of beginning union was noted averaging twenty-four days, and in twenty-six the time of consolidation averaged forty days. As our patients were, in general, evacuated early, we are unable to give much data as to the time of functional cure. We have treated a small number of simple fractures by this method and they have done excellently.

Dr. Ralph T. Knight, Minneapolis: The interesting part about the treatment of war fractures is that the principles have been and will be used extensively in fractures of civil practice. The point I wish to call especial attention to is the possibility and importance of mobilization of the knee joint during the treatment of all fractures of the femur and the bones of the lower leg. It has been shown conclusively and consistently by Colonel Blake that it is not necessary to immobilize the fragments completely in order to obtain the nicest union and return of function; and it is possible to obtain sufficient immobilization of fragments still leaving the knee free to be moved by the patient with proper apparatus.

Practice with Sickness Insurance in Germany.—The *Nederlandsch Tijdschrift* states that a regulation has been adopted by the sickness insurance companies at Hamburg—mainly through the efforts of Professor Pfeiffer—which he thinks should be imitated by the companies throughout the whole country. The insured pay as their premiums 4 per cent. of their wages. Of the amounts thus paid in, the companies pay out 23 per cent. for medical care, the house physicians receiving three fourths of the whole and specialists one fourth. For any extra attendance at night or in emergencies physicians not under contract with the company are to be called on. The payments are to be according to the work done and this is estimated by a commission composed of physicians and representatives of the business office of the companies. The insured have free choice among the physicians under contract with the company. The agreement is to be in force for two years. The details were given in the *Münchener medizinische Wochenschrift*, No. 29.

AMERICAN-MADE SYNTHETIC DRUGS—II

EXAMINATION OF PROCAIN (NOVOCAIN), BARBITAL (VERONAL), PHENETIDYL-ACETPHENETIDIN (HOLOCAIN), CINCHOPHEN OR PHENYLCINCHONINIC ACID (ATOPHAN), MANUFACTURED UNDER FEDERAL TRADE COMMISSION LICENSES*

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Before European hostilities, the United States was so dependent on Germany for synthetic drugs that the dependence was considered a necessity; this was strikingly manifested by the precipitous rise in prices immediately after the embargo was declared against Germany. Since then the shortage of German-made synthetics has caused two important results: 1. The physician can do without most of the German drugs, because the pre-war demand had been stimulated artificially. 2. Those few synthetics, which were in great need, are being rapidly replaced by the American-made drugs.[1] In connection with the second result, the Chemical Laboratory of the American Medical Association has endeavored to contribute its services.

In September, 1917, it was announced[2] that the A. M. A. Chemical Laboratory would make studies of American-made synthetics. Just prior to this announcement, the National Research Council established a committee on synthetic drugs[3] "to facilitate the manufacture of synthetic drugs in this country and thus to relieve shortage and reduce the exorbitant prices which have resulted from the war."[4] Also during this time Congress was considering the "trading with enemy" act, first known as the Adamson bill—the purpose of which was to confer authority on the President to license American firms to use U. S. patents owned by German subjects. The act became law, September 28; the Federal Trade Commission was designated by the President to carry out the provisions of the law as it referred to enemy-owned patents. As a result of a conference, Oct. 30, 1917,[5] with various agencies, the Federal Trade Commission decided to consider licenses for manufacturers of synthetic drugs, *after* recommendations had been made by the Committee on Synthetic Drugs of the National Research Council; this committee in turn invoked the aid of the A. M. A. Chemical Laboratory in testing the manufacturer's products. The essence of the laboratory's work up to July 1, 1919, is reported in this paper.

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* From the Chemical Laboratory of the American Medical Association.

* The first article of this series dealt with the purity of acetylsalicylic acid. Leech, P. N.: Examination of American-Made Acetylsalicylic Acid, J. Indust. & Engin. Chem., April, 1918, p. 288. "What's in a Name?" ibid., p. 255. Acetylsalicylic Acid, or "What's in a Name?" Editorial, J. A. M. A. **70:** 1097 (April 13) 1918.

1. Stieglitz, Julius: Synthetic Drugs II, J. A. M. A. **70:** 688 (March 9) 1918. Leech, P. N.: The Vindication of the American Chemist; Synthetic Drugs, Chicago Chem. Bull., January, 1918, p. 230.

2. The Quality of American-Made Synthetics, J. A. M. A. **69:** 1018 (Sept. 22) 1917.

3. This committee is composed of Julius Stieglitz, chairman, professor of chemistry, University of Chicago; W. A. Puckner, secretary of the Council on Pharmacy and Chemistry, American Medical Association, and Moses Gomberg, professor of chemistry, University of Michigan.

4. Stieglitz, Julius: Shortage of Synthetic Remedies, J. A. M. A. **69:** 400 (Aug. 4) 1917.

5. Foreign Patents to Be Open to American Manufacturers, J. A. M. A. **69:** 1550 (Nov. 3) 1917.

THE NAMING OF LICENSED DRUGS

"Partly in order to help insure to licensees a market for their products after the war, in larger part inspired by the idea of encouraging the establishment of a permanent American industry in these important articles, the [Federal Trade] Commission wisely decided that American houses should be put on the same footing as competing foreign houses for after-the-war competition, by imposing on all licensees the obligation to use *new official names* for the articles, names which after the war will be open to all competitors, domestic and foreign."[6]

The new American names are:

Arsphenamin,[7] (contracted from the scientific name arsenphenolamin) for salvarsan, arsenobenzol, diarsanol, arsaminol.

Barbital (contracted from the scientific name diethyl-barbituric acid) for veronal.

Barbital-sodium (the sodium salt of barbital) for "veronal-sodium" and "medinal."

Cinchophen for atophan or phenylcinchoninic acid (the U. S. P. IX name).

Procain for novocain hydrochlorid (from "pro" and "(co)caine").

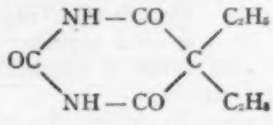
Procain nitrate for novocain nitrate.

EXAMINATION OF SYNTHETIC DRUGS

In testing chemically the products which had been submitted to the Federal Trade Commission, the aims were that the product should conform to a high degree of purity; at the same time the candidate for license should not be inflicted with undue hardships in making the product, such as an unnecessarily high degree of purity. It was insisted that the purity of the drugs should be equal to, if not greater than, that of the respective former German-made products, in order to uphold the name and reputation of the American manufacturers in the after-the-war competition. Consequently, in the chemical work the American product was always examined parallel with the German-made product, authentic samples of the latter of which the laboratory had in its possession. Whenever possible, the tests described in books of standards were carried out.

BARBITAL (VERONAL)

Barbital was introduced into medicine under the proprietary name "veronal," and was manufactured in Germany by Friedr. Bayer & Co., Leverkusen, and E. Merck & Co., Darmstadt, Germany. Barbital is described in New and Nonofficial Remedies 1919[8] as diethylbarbituric acid (diethylmalonyl urea).



It is official in the British Pharmacopeia under the name "barbitone," and in the German Pharmacopeia as "acidum diethylbarbituricum." Barbital "may be prepared by the interaction of esters of diethylmalonic acid with urea in the presence of metallic alcoholates. . . . It is also obtained by condensation of diethylcyanacetic ester with urea by means of sodium alcoholate." Barbital is used in medicine chiefly as a hypnotic.

The different brands of barbital which were submitted to the laboratory were subjected to the tests given in the books referred to above.[9] The products were:

1. Barbital (Abbott) Sample A, to Federal Trade Commission.
2. Barbital (Abbott) Sample B, to Federal Trade Commission.
3. Barbital (Abbott) Sample C, to Red Cross.
4. Barbital (Antoine Chiris), to Federal Trade Commission.
5. Barbital (V. Halter), to Federal Trade Commission.
6. Barbital (Rector Chemical Company) to Federal Trade Commission.
7. Diethylbarbituric acid (Merck), to Council.
8. "Veronal," manufactured by Farb. vorm Fried. Bayer & Co., Germany.

All responded satisfactorily to the tests. In Table 1 are given the respective melting points and percentages of ash found. (The melting point of a mixture of the sample with the original "veronal" was always taken.)

TABLE 1.—MELTING POINT

		Ash			Ash
1	188.5-189.0	0.01	5	188.0-188.5	0.01
2	188.5-189.0	0.01	6	188.0-188.5	0.01
3	188.0-188.5	0.01	7	188.0-188.5	0.01
4	188.0-188.5	0.04	8	188.0-188.5	0.02

Barbital does not seem to form an insoluble salt with chlorplatinic acid; nor an ether-insoluble hydrochlorid or oxalate; nor an insoluble barium salt. It does not respond to many urea tests, and is not affected by urease as would be expected in light of the extensive investigations made on this enzyme by Van Slyke and Cullen.

As barbital is also sold in the form of tablets or mixtures, a reliable method for its quantitative determination in the presence of other substances is needed. Some experiments in this direction were made, but the press of other work did not permit their continuation. When time permits, this work will be resumed.

At the time of writing this article, licenses for manufacture had been granted by the Federal Trade Commission to the Abbott Laboratories, to Antoine Chiris Company, and to the Rector Chemical Company.

BARBITAL SODIUM (MEDINAL OR VERONAL-SODIUM)

Barbital sodium, formerly sold under the proprietary names "veronal-sodium" and "medinal," is, as the former name suggests, the sodium salt of diethylbarbituric acid. Its therapeutic advantages are stated to be that more rapid results are obtained because of its increased solubility over barbital alone.[10] Barbital sodium should yield, according to theory, 11.19 per cent. of sodium and 89.31 per cent. of diethylbarbituric acid. A number of years ago, when "veronal-sodium" and "medinal" were being introduced, Puckner and

6. For an interesting discussion, see Stieglitz, Julius: Synthetic Drugs, J. A. M. A. **70**: 536 (Feb. 23); 688 (March 9); 923 (March 30) 1918. Bracken, L. L.: Federal Trade Commission Requests Use of Official Names, ibid. **70**: 558 (Feb. 23) 1918.

7. The testing and standardizing of arsphenamin is being done by the Hygienic Laboratory, U. S. Public Health Service. For chemical tests see reprint 472, Public Health Reports. For a review of the patent literature see article by H. F. Lewis, J. Indst. Engin. Chem., Feb. 1, 1919, p. 141.

8. New and Nonofficial Remedies, 1919, published by The Council on Pharmacy and Chemistry of the American Medical Association, p. 82.

9. The pharmaceutic monograph on barbital has been omitted. It was published in the 1918 edition of the Annual Reports of the Chemical Laboratory of the American Medical Association.

10. New and Nonofficial Remedies, 1918, p. 96.

Hilpert[11] found that these products yielded results corresponding closely to the theoretical amounts of sodium and diethylbarbituric acid. A recent examination of veronal-sodium, Merck, made for the Council on Pharmacy and Chemistry, showed it to be of the same composition as that previously reported.

Only one firm's product has been submitted to the laboratory through the Committee on Synthetic Drugs,

TABLE 2.—EXTRACTION OF A SAMPLE OF BARBITAL SODIUM

	Length of Time	Diethylbarbituric Acid per Cent.	
a.	Immediately	75.5	
a[1].	¾ hour	82.0	
b.	Immediately	82.0	
c.	1½ hours	80.5	
d.	4 hours	82.82	
e.	4 hours	83.56	
f.	4 hours	83.41	
g	45 hours	84.89	
h.	45½ hours	84.73	
Theory	.....	89.31	
Veronal-Sodium	(Puckner and Hilpert)	89.01	(average)
Medinal	(Puckner and Hilpert)	88.95	(average)

but because of the unsatisfactory results, it was not recommended for license, nor, as far as we are aware, has the firm investigated its anomalies.[12] The amount of moisture in this specimen was 0.04 per cent. It yielded 10.94 and 10.97 per cent. of sodium. Puckner and Hilpert found 11.02 per cent. of sodium in "medinal," and 11.01 per cent. of sodium in "veronal-sodium." The theoretical amount, according to the formula given for medinal by the proprietors $(C_2H_5)_2$ CCONNaCONHCO is 11.19 per cent. When an aqueous solution of barbital sodium was acidified, and the diethylbarbituric acid extracted with ether, it was found that the amount of freed acid extracted varied directly with the length of time after acidification.

It is possible that in preparing the sodium salt of diethylbarbituric acid, the ring opens up, forming a compound not so easily affected by dilute mineral acids.

PHENETIDYL-ACETPHENETIDIN HYDROCHLORID[13] (HOLOCAIN HYDROCHLORID)

Phenetidyl-acetphenetidin hydrochlorid was introduced in the United States under the name "holocain hydrochloride" by Farbwerke, vorm Meister Lucius and Bruening, Hoechst a. M. Germany; the product apparently had not been patented in this country, although it was protected in Germany under patents No. 78,868 and 80,568. New and Nonofficial Remedies, 1918, describes "holocain hydrochlorid" as ethenyl-paradiethoxy-diphenyl-amidin hydrochlorid $CH_3:(NC_6H_4OC_2H_5)(NHC_6H_4OC_2H_5)HCl$. It is used as a local anesthetic for the eye.

The standards, such as had been described, were meager and unsatisfactory. Hence when the first specimen of American-made phenetidyl-acetphenetidin was sent to the A. M. A. Chemical Laboratory through the agency of the Federal Trade Commission and the Committee on Synthetic Drugs, it was necessary for the laboratory to work out adequate standards.[14] As a result of the chemical work, a rather comprehensive monograph was drawn up, which was published in the 1918 Laboratory Reports. A summary of the products examined, with some of the chemical data, is given in Table 3. It will be seen that one specimen had a deficiency of about 2 per cent. of free base.

The melting point of the free base is given by a number of writers at 121 C. Although Kennert[15] stated it to be 117 C. and not 121 C., his findings seemingly went unheeded. It will be noted that our work shows the melting point to be in accord with that announced by Kennert.

The Federal Trade Commission has not issued any licenses for the manufacture of "holocain hydrochlorid." The John T. Milliken Company has withdrawn its application. The H. A. Metz Laboratories (Successor to Farbwerke Hoechst Company, New York) are making the product in this country.

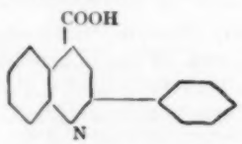
TABLE 3.—DATA ON PHENETIDYL-ACETPHENETIDIN HYDROCHLORID

Manufacturer	Appearance	Moisture	Melting Point	Phosphorus Compounds	Phenetidin*	Indol Reaction	Ash	Per Cent. Base by Weight	Per Cent. Base by Titration	Melting Point of Base	Per Cent. Platinum in Platinum Salt +
John T. Milliken Co.	White crystalline powder	5.13	191.5 to 192	Absent	Negative	Positive	0.00	89.16	89.16	116 to 117	19.02
Synthetic Products Co.	White crystalline powder	2.90	192 to 192.5	Absent	Negative	Positive	0.13	87.49	87.26	116 to 117	19.3
H. A. Metz Laboratories, Inc.	White crystalline powder	4.99	192 to 192.5	Absent	Negative	Positive	0.00	89.14	88.55	117	19.34
Farbwerke-Hoechst Co. ..... (German specimen)	Slightly pink crystal	5.60	190 to 191	Absent	Negative	Positive	0.16	89.65	89.64	116 to 117	19.00

* The phenetidin test is not very sensitive.

CINCHOPHEN (PHENYLCINCHONINIC ACID, U. S. P.; ATOPHAN)

Cinchophen (phenylcinchoninic acid) was introduced in the United States as a medicine under the proprietary name "atophan," by Shering and Glatz, New York City, who before the war were the American agents for the German manufacturers "Chemische Fabric auf Actien von E. Schering, Berlin." Phenylcinchoninic acid (*2* phenyl-quinolin-4 carboxylic acid) was first described by Doebner and Gieseke[16] in 1887, who prepared it by warming together pyro-racemic acid, benzaldehyd and anilin in alcoholic solution; it has the structural formula:



The chief use of phenylcinchoninic acid is as an antiuric acid agent, especially indicated in gout.

11. Puckner, W. A., and Hilpert, W. S.: Veronal-Sodium and Medinal, J. A. M. A. **52**: 311 (Jan. 23) 1909; Rep. A. M. A. Chemical Lab., **2**: 13.

12. Since this was written, the Council on Pharmacy and Chemistry has also accepted "Barbital-Sodium Abbott."

13. No short, scientific name has been given for this substance although several are under consideration.

14. Certain chemical tests are described by E. H. Rankin, Indian J. M. Res. **4**: 237, 1916; also Chem. Abst. **10**: 524. Other references are Schmidt: Pharmateutische Chemie **2**: 990. Beilstein II, (403). Arends, G.: Neue Arzneimittel und pharmazeutische Spezialitäten, Ed. 4, 1913, p. 271.

15. Kennert: Chem. Zentralbl. **2**: 556, 1897.

16. Doebner and Gieseke: Ann. d. Chem. (Liebigs) **240**: 291, 1887.

In 1913, the German house of Schering was made the assignee of patent 1,045,759 granted by the United States government[17] for the manufacture of phenylcinchoninic acid; at about the same time the product was admitted to the U. S. Pharmacopeia IX, under very loosely constructed standards.

Some time after the beginning of the European war the proprietary "atophan" became scarce in America. In 1917, however, Schering and Glatz, New York, placed American-made atophan on the market and submitted it to the Council on Pharmacy and Chemistry. Later, other firms began to manufacture the product and also submitted specimens. During the time it was investigating these products, the Federal Trade Commission decided that a license was needed to manufacture phenylcinchoninic acid under the patent just referred to, so that altogether the laboratory had a number of specimens to examine.

In making the examinations for the Council, the laboratory was practically confined, by virtue of the Food and Drugs Law, to limit its requirements of purity to those of the Pharmacopeia. Practically, the only tests were melting point, ash and solubility. According to the U. S. Pharmacopeia the melting point is "about 210." In New and Nonofficial Remedies, 1918, it was explained that atophan "complies with the standards for phenylcinchoninic acid, U. S. P., but melts between 208 and 212 C." The U. S. Pharmacopeia requires that no weighable ash remains on incinerating about 0.5 gm. of phenylcinchoninic acid. Considerable variations, especially in melting points, were found, as can be seen from Table 4.

By referring to this table on melting points and ash content it will be noted that the production of a better grade of products resulted after the respective firms had submitted samples to the A. M. A. Chemical Laboratory for criticism, and from a chemical standpoint, the last products examined were found to be as satisfactory as the German-made "atophan."

Solubility of Cinchophen (Phenylcinchoninic Acid.)—As methods of determining impurities, or estimating the degree of purity of phenylcinchoninic acid were not described in the U. S. Pharmacopeia, it was decided to try extraction methods.[18] This in turn led to the question of solubilities. The U. S. Pharmacopeia gives the solubility of phenylcinchoninic acid only in general terms; hence it was deemed advisable to determine its solubilities and describe them in more definite terms. The sample of phenylcinchoninic acid employed to determine the solubility was obtained by repeated recrystallization from alcohol of a commercial specimen. Solubilities were determined in water, 95.0 per cent.; alcohol, 48.5 per cent.; alcohol,[19] chloroform and ethhyl acetate.[20] Complete saturation of the solvent was attained according to the U. S. P. IX method (p. 599). The bath was maintained at a temperature of 25 C., with a range of ± 0.2 degrees. The solution was analyzed by the method of Seidell.[21] The data obtained for the solubility of phenylcinchoninic acid are given in Table 5.

The Abbott Laboratories, Chicago, have been licensed by the Federal Trade Commission to manufacture cinchophen. Other firms, however, have decided to manufacture it without the formality of obtaining a license, evidently considering the German-obtained patent not to be valid.[22]

TABLE 4.—MELTING POINTS AND ASH

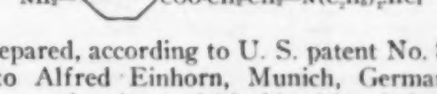
Product No.	Manufacturer	Melting Point, C.	Ash, %
1	Abbott Laboratories, Chicago	208.5-210.5	0.05
2	Abbott Laboratories, Chicago	212 -213	0.06
1	Calco Chem. Co., Bound Brook	209 -210.5	0.07
1	Morgenstern, New York	204.5-207.5	2.8
2	Morgenstern, New York	209.5-211.5	None
1	Schering and Glatz, New York	206 -208	None
2	Schering and Glatz, New York	209 -211	None
3	Schering and Glatz, New York	208.5-210	0.17
4a	Schering and Glatz, New York (1)	208.5-210	0.2
4b	Schering and Glatz, New York (2)	208.5-209.5	0.3
4c	Schering and Glatz, New York (3)	208.5-210	0.025
1	Wm. H. Sweet and Co., Columbus	204 -208	None
2	Wm. H. Sweet and Co., Columbus	209.5-211.5	0.04
1	German specimen from Schering and Glatz	210 -212	None

TABLE 5.—SOLUBILITY OF CINCHOPHEN

Solvent	Gm. per Hundred Gm. of Sat. Solution	Solubility, Parts by Weight
Distilled water	0.0160	1 in 6,216.6
95 per cent. ethyl alcohol	0.8343	1 in 119.9
Dilute ethyl alcohol	0.0875	1 in 1,142.6
Chloroform	0.1075	1 in 929.7
Ethyl acetate	1.4151	1 in 70.6

PROCAIN (NOVOCAIN)

Procain was introduced in medicine under the proprietary name "novocain," and before the war was obtainable in this country only through the Farbwerke Hoechst Company, the American representative of the German establishment, Farbwerke vorm Meister Lucius Bruening, Hoechhst a. M. Chemically it is the mono-hydrochlorid of para-amino-benzoyl-diethyl-amino-ethanol, having the structural formula:



It is prepared, according to U. S. patent No. 812,554 (issued to Alfred Einhorn, Munich, Germany) by treating para-nitro-benzoylchlorid with ethylene chlorhydrin and diethylamin with subsequent reduction of the nitro groups, the resulting product being purified by recrystallization.

Procain is employed largely in infiltration anesthesia. It is less toxic than cocain, but its anesthetic action is not sustained. This drawback is overcome by the simultaneous injection of epinephrin, and for this reason procain is often compounded with epinephrin in tablets, thus obviating the necessity of separate solutions.

When the first specimens of the American-made product were submitted through the channels of the Federal Trade Commission, it was necessary to compile a monograph.[23] This was prepared from descriptions in the available literature, mostly from tests described in New and Nonofficial Remedies, 1918, and the German Pharmacopeia V.

The submitted products were found satisfactory chemically. The toxicity determinations made by Dr. R. A. Hatcher, with the assistance of Dr. Carey

17. The validity of this patent is to be doubted.

18. Attempts were made to make salts of phenylcinchoninic acid with metals such as copper, mercury, barium and calcium, and also the chloroplatinic acid or periodid addition products. Reliable quantitative results could not be obtained.

19. This corresponds to "diluted alcohol, U. S. P."

20. The ethyl acetate was Merck's product (redistilled), stated to contain 81.6 per cent. of ethyl acetate, 10 per cent. alcohol and alcohol derivatives.

21. Seidell, A.: Bull. 67, Hyg. Lab., U. S. P. H. S., p. 11.

22. Very recently the Chemical Foundation, Inc., has undertaken to grant licenses for cinchophen. The Calco Chemical Company has obtained one.

23. The monograph appears in New and Nonofficial Remedies, 1919.

Eggleston[24] indicated that none of the specimens are to be considered dangerous when used in ordinary dosage for normal individuals. Therefore the Federal Trade Commission, on recommendation of the Committee on Synthetic Drugs of the National Research Council (aided by the A. M. A. Chemical Laboratory), issued licenses for the manufacture of procain to the Farbwerke-Hoechst Company (which license was later transferred to the H. A. Metz Laboratories), to the Abbott Laboratories, to the Calco Chemical Company and to the Rector Chemical Company.

Subsequently the products of the licensed firms were submitted to the Council on Pharmacy and Chemistry, which in turn invoked the aid of the A. M. A. Chemical Laboratory and the Cornell University Pharmacologic Laboratory. Later the Council asked the laboratory to examine the *market* supply. Altogether, therefore, a number of products were examined which were found to respond satisfactorily to the tests outlined (Table 6).

TABLE 6

Brand	Date Received	Color	Melting Point, C.*	Ash, %
Procain (Abbott), from Committee on Synthetic Drugs	12/21/17	White	154 -155	None
Procain (Abbott), submitted to Council P. and C.	1/29/18	White	153.5-154.5	None
Procain (Abbott), Gen. Pur. Off. U. S. Army	8/31/18	White	152.5-153.5	None
Procain (Abbott), Gen. Pur. Off. U. S. Army, No. 89999	9/30/18	Slight brownish tint	153 -154.5	None
Procain (Abbott), Gen. Pur. Off. U. S. Army, No. 89998	9/30/18	Slight brownish tint	153 -154.5	0.005
Procain (Abbott), Gen. Pur. Off. U. S. Army, No. 89997	10/ 8/18	Slight brownish tint	153 -154	None
Procain (Abbott), Gen. Pur. Off. U. S. Army, No. 89996	11/ 4/18	Slight brownish tint	153.5-154.5	None
Procain (Abbott), Gen. Pur. Off. U. S. Army, No. 810995	11/ 4/18	Slight brownish tint	153.5-154.5	None
Procain (Calco), from Committee on Synthetic Drugs	2/ 7/18	White	153.5-154.5	None
Procain (Farbwerke-Hoechst Co.), submitted to Council	10/24/18	White	153 -154	None
Procain (Farbwerke-Hoechst Co.), submitted to Council	12/10/17	White	153 -154.5	None
Procain (Farbwerke-Hoechst Co.), submitted to Council, market spec. "A 56"	8/ 9/18	White	153.5-154.5	None
Procain (Farbwerke-Hoechst Co.), submitted to Council, market spec. "A 57"	9/ 9/18	White	153.5-154.5	None
Procain (H. A. Metz Lab.), market spec. "A 63"	8/23/18	White	153 -154	None
Procain (H. A. Metz Lab.), market spec. "A 57"	9/23/18	White	153 -154	None
Procain (Rector), from Committee on Synthetic Drugs	12/18/17	White	153 -154.5	None
Procain (Rector), from Committee on Synthetic Drugs	5/ 2/18	White	152.5-153	None
Procain (Rector), market spec.	8/20/18	Slight brownish tint	153 -155	None
Procain (Rector), market spec.	8/23/18	Slight brownish tint	153 -155	None
Procain (Rector), market spec.	8/23/18	Slight brownish tint	153 -154.5	None

* U. S. Patent 812,554 — the novocain patent — declares that the salt melts at 156 C. Evidently based on this, both the German Pharmacopeia and past editions of New and Nonofficial Remedies give this melting point. Two specimens of German-made novocain obtained from our files, stated to be manufactured by Farbwerke-Hoechst vorm. Meister, Lucius and Bruening, Hoechst a. M., were found to melt, respectively, between 154 and 155 C. and between 153.5 and 154.5 C. when the melting point was determined according to the direction of the U. S. Pharmacopeia, ninth revision. The various specimens examined at that time melted between 153 and 155 C., and it was decided to permit this range.

An examination of some American-made procain-suprarenin tablets was also made. The procain was determined by liberation of the alkaloid with ammonia water, extraction with chloroform evaporation of the chloroform, dissolving the alkaloid in one hundredth normal sulphuric acid solution and titrating excess acid with one hundredth normal sodium hydroxid solution. The epinephrin was determined according to the method employed by Seidell,[25] with slight modifications. The tablets contained the claimed amounts of ingredients.

24. The report of these and subsequent toxicity experiments on procain appeared in the report of the Council on Pharmacy and Chemistry, J. A. M. A. **72**: 136 (Jan. 11) 1919.

THE SYNTHETIC DRUG SITUATION

Before the war, the American physician was literally bombarded with new and wonderful (?) coal-tar synthetics, most of which were originated in Germany. In fact, it seemed that if a by-product in the manufacture of dyes could not be used for a dye per se, then a place might be found for it in the ever increasing lists of medicaments. By clever advertising and propaganda among physicians, an artificial stimulation for coal-tar drugs was created which evidently yielded lucrative financial returns. As a result of the war, it is interesting to observe that of all the synthetic drugs imported into this country from Germany and on which the American patents were controlled by the Germans (up to the time of our entrance into the war), the demand was really sufficient enough to warrant the commercial manufacture of only four of them by American firms. Of course, a larger number of *nonpatented drugs*, also imported from Germany, are now being made in sufficient quantities in this country; many of the drugs in this class were never patented or are the ones which have survived after the patent had expired, such as acetanilid, acetphenetidin, and acetylsalicylic acid.

In view of the agitation to found an institute for cooperative research as an aid to the American drug industry under the auspices of the American Chemical Society, it will be well for the medical profession to be on its guard against too enthusiastic propaganda on the part of those engaged in the laudable enterprise of promoting American chemical industry. Unless it is, it may be inflicted in the future, as in the past, with a large number of drugs that are either useless, harmful or unessential modifications of well-known pharmaceuticals. It will be well also for the chemists—those engaged in this enterprise—to be sure that the product is of therapeutic value before asking its use as a medicine. The American medical profession has learned that relatively few of the many German synthetics were really valuable or decided improvements over established drugs. If American chemists desire to retain their prestige with the medical profession, they should earnestly endeavor to see that the advantages derived from the war and from such an institute as proposed are not abused in the worthy desire to popularize chemistry both educationally and commercially. They should realize that physicians are in no receptive mood for a flood of synthetics, even though "American-made."

On the other hand, the constructive possibilities of chemistry in the service of medicine should serve as a stimulus for American research. Notwithstanding all the pharmaceutical shrubbery which Germany sent to us, still it did contain some synthetics that were worth while. As therapeutics has been benefited by these organic chemicals, it is logical to reason by analogy that there remain other synthetics to be discovered which will occupy places of equal distinction in the modern materia medica. For example, vaccines are of undoubted merit in the field of immunology, but their action is, in the end, chemical; as soon as chemical technic is refined by medicochemical research,

25. Seidell: J. Biol. Chem. **14**: 19, 1913.

it is quite possible that a definite chemical agent (synthetic) will supersede the indefinite bacterial vaccines. Obviously the American chemist has the opportunity of showing his resourcefulness in aiding the public health of America and the world. In this connection, a cooperative institute devoted to purely scientific drug research, and governed in such a manner as to inspire confidence in its humanitarism and unbiased judgment, should serve a most commendable purpose. The hopes of American men of science are for a monumental research institution—cooperative with all the allied professions—and, as the *Chicago Chemical Bulletin* stated, "Stripped of all professional or commercial pettishness and not dominated by any one group of scientists."[26]

CONCLUSIONS

As for the results of the work so far, they can be summed up in two sentences.

1. American chemists are producing synthetic drugs formerly controlled by Germany, and thus have declared their independence of German chemicals.

2. Judging from the evidence at hand, we can feel assured that the quality of American synthetics will be second to none.

ALLERGY IN DRUG IDIOSYNCRASY*

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It is my purpose in this paper to call attention to some of the peculiar drug reactions occurring in man and, at the same time, to offer an explanation of them.

In a perusal of the recent textbooks on pharmacology, it was found that the word "idiosyncrasy" appears in all; but the definitions are almost as numerous as the books themselves, and in none is there any explanation for the peculiar effects of many drugs on certain people.

Given a normal person, any drug exhibited in therapeutic doses manifests a certain normal action, a side action and, in larger amounts, a toxic action, both the normal and the toxic action being more or less definitely fixed, symptomatically, for all individuals of the same species.

On the other hand, there are individuals within any species that manifest exaggerated normal and side actions from many such reasons as alterations in rate of absorption, excretion or destruction within the organism, or instability of the mechanism through which some drugs act. For example, the stimulating action of morphin, occasionally seen, is due to an exaggeration of the normal stimulating effect, which is usually marked by depression. The lessened normal action (or tolerance) is usually dependent on long-continued use of the drug. This may not be the case. The explanation of tolerance undoubtedly varies with different drugs, and a discussion of it will not be attempted here. These exaggerated normal and side actions and lessened action (or tolerance) should be included under the general heading "idiosyncrasy," and separated entirely from the abnormal actions now to be considered, and for which explanation is offered.

26. Proposed Institute for Drug Research, editorial Chicago Chem. Bull., April, 1919, p. 67.

* Read before the Section on Pharmacology and Therapeutics at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

ALLERGIC ACTION OF DRUGS

In a former paper, with Vander Veer, I was able to estimate that approximately 10 per cent. of all human beings manifest some form of hypersensitiveness. By this is meant that such persons react in a peculiar and specific way to substances that are innocuous in anything like such doses to the average individual of the race.

Coca's classification of hypersensitiveness into "anaphylaxis" and "allergy" will serve to clarify this whole field, which has been confused by the attempt to explain natural and artificial hypersensitiveness on the same basis.

Anaphylaxis is an antigen antibody reaction, artificially induced by immunologic processes. Allergy is used to express the natural hypersensitiveness of the individual not produced by immunologic processes, as the exciting agents or allergens are in many cases not capable of producing antibodies. For example, the natural hypersensitiveness of the human being to pollens, the clinical reaction to which is known as hayfever, is admittedly allergic. In experiments carried on with Coca and Flood, we could not demonstrate antibody in the individual during an attack or after injection of pollen extract by passive transfer, nor could antibody be produced in the guinea-pig itself. In other words, the extract is nonantigenic. Other substances, such as glue and certain drugs like acetylsalicylic acid, to which individuals react peculiarly, are also nonantigenic. To be sure, many of the substances to which the human being does show clinical hypersensitiveness are capable of forming antibodies. Hence the confusion between the natural hypersensitiveness or allergy and the artificial or anaphylaxis.

PROOFS OF ALLEGRIC NATURE OF DRUG REACTIONS

Inheritance.—One of the proofs of the allergic nature of abnormal drug reactions is the fact that it is established by inheritance. Natural human hypersensitiveness has been shown by Vander Veer, in collaboration with me, to be an inherited trait, and one inherited, according to the mendelian law, as a dominant characteristic. Of the fifteen cases of drug reactions which form the basis of this paper, a positive antecedent history of hypersensitiveness existed in twelve, and in the other three there were evidences of other forms of allergy, such as asthma, urticaria and hayfever, in the individual himself.

Symptomatology.—The symptoms of drug reaction or allergy are absolutely separate and apart from any normal or toxic action, and are the same as those occurring with foods, pollens and animal emanations. The symptoms are coryza, cough, bronchial spasm with urticaria in some cases, or angioneuritic edema, and frequently gastro-intestinal manifestations, with pain, vomiting and diarrhea. Occasionally, with the antipyretics, hyperpyrexia occurs or cardiac collapse and, in practically all, a marked eosinophilia, from 10 to 15 per cent. I shall speak particularly of the acetylsalicylic acid reactions, as these have been most frequently encountered thus far. Symptoms begin, as a rule, from fifteen to twenty minutes after the ingestion of 10 grains of the commercial drug. In nine of the fifteen cases, violent bronchial asthma was induced and one case was almost fatal from asphyxia. The attack lasts from eight to thirty-six hours, and in one instance was prolonged for three weeks. In only three of the cases was urticaria present. Con-

stitutional reactions lasting three days have been produced after an intradermal test containing not more than 0.1 grain of acetylsalicylic acid. The onset of symptoms in these cases is almost immediate. Positive cutaneous reactions by testing are not obtained except in those cases in which there is a clinical history of urticaria. In other words, skin hypersensitiveness as a rule does not exist.

In some cases, the allergic reactions are delayed. In the literature are reported instances of allergic drug reactions appearing from five to twenty days after the primary injection.

Specificity.—The reactions seem to depend in most cases on the chemical molecule as a whole; in a few cases, on some fraction of the molecule. Three of the cases that showed a bronchial reaction to acetylsalicylic acid gave no reaction to salicylic acid, benzoic acid, antipyrin, sodium acetate or methyl salicylate. On the other hand, many of the instances of drug reactions reported in the literature are shown to be due to fractions of the molecule. For example, iodoform hypersensitiveness has been shown to be due to the CH_3 group, and not to iodin or iodid.

No attempt is made here to give a complete summary of the subject of drug allergy. I merely wish to emphasize the conception that such a condition exists, and that it should not be confused with what are ordinarily and properly classified as idiosyncrasies. In order to clarify the ideas on drug action, it seems possible to make tentatively some such classification as the following:

1. Normal action—side action and toxic action.
2. Idiosyncratic action—(*a*) exaggerated normal action; (*b*) exaggerated side action; (*c*) lessened normal action (tolerance).
3. Allergic action—abnormal action.

No attempt is made in this classification to include racial variations, which are not idiosyncratic except when comparing one species with another which has an entirely different organic or functional mechanism.

ABSTRACT OF DISCUSSION

Dr. Lambert Ott, Baltimore: I was interested in hearing Dr. Cooke's report in regard to the sensations following the injections of acetylsalicylic acid. It must be interesting to know this condition. Some years ago I reported such a case which I called an idiosyncrasy; for after all, these conditions are produced by some chemical. I saw a patient, 37 years of age, who took acetylsalicylic acid and developed bronchial spasms. Sometimes he was advised what he was taking and sometimes not. The drug was administered in capsules and in powders, and in every instance the man developed bronchial spasms.

The Record of Vaccination.—In the Municipal Hospital of Philadelphia, during thirty-four years, in which time over 9,000 cases of smallpox have been treated, no physician, nurse or attendant who has been successfully vaccinated or revaccinated prior to going on duty has contracted the disease. On the other hand, in the Fever Hospitals of London, according to Ernest Hart, in 1893, of 2,484 persons employed, 130 became infected and two died; seventy-three had scarlet fever and twenty-three contracted diphtheria. The deaths from smallpox, in England, are thirteen per million for medical men (who are well vaccinated) as against seventy-three per million of the general population; whereas fifty-nine medical men per million die of scarlet fever as against sixteen per million of the general population.—Welch and Schamberg, Acute Contagious Diseases.

FILARIAL PERIODICITY*

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A most interesting phenomenon in blood parasitology and one of practical importance in the question of transmission of the parasite, is the periodicity of filariae. This term has come to mean a periodic increase in numbers in peripheral capillary blood of the embryos of filariae. This, in the case of *Filaria bancrofti*, occurs during the hours of sleep, and of *Filaria loa*, during the hours of activity. Until Smith and Rivas[1] developed the acetic acid concentration method of counting the number of microfilariae in a given amount of blood, "filarial periodicity" signified the periodic appearance and disappearance of microfilariae in the peripheral blood. This acetic acid concentration method of examining for microfilariae has brought about important changes in our conception of the phenomenon, and has opened a new avenue of approach to the problem.

Smith and Rivas have thus been enabled to show that filaria embryos are to be found in the peripheral blood at all times of the day and night, and that the periodicity is a matter of a relative number of embryos circulating in the blood. They[2] have given a method of making an exact count, and they have been led to formulate a new theory as explaining the phenomenon.

They have shown that the period of cutaneous prevalence of *Microfilaria bancrofti* is from midnight to 8 a. m., the maximum being about 2 a. m.; that the period of cutaneous prevalence of *Microfilaria loa* is from 8 a. m. to 4 p. m., the maximum being about noon, and that from 4 p. m. to midnight is a period of cutaneous paucity of both.

Regarding these periods as those respectively of (*a*) greatest peripheral relaxation from fatigue and sound sleep; (*b*) of recovery from fatigue and the resumption of capillary tone in the periphery, and (*c*) of capillary constriction from the combined influences of tone and of compression from muscular activity, and believing that both microfilariae are restricted (but not prevented) in their motility by their ensheathment, *Microfilaria loa* evincing greater motile effort than *Microfilaria bancrofti*, Smith and Rivas advance a theory in which the mechanics of the capillary circulation plays the main rôle, with the restricted motility of the parasite playing a minor part. In brief, the theory considers that the parasites are both in smallest numbers when they have the easiest progress through relaxed capillaries (the period of relaxation, 4 p. m. to midnight), that *Microfilaria bancrofti* is caught by the first resumption of capillary tone (from midnight to 8 a. m.), that the parasites get through, finally, by the end of this time, and are then held up again in the pulmonary capillaries, and that *Microfilaria loa*, because of greater motile effectiveness is enabled to pass this moderate opposition; but when the capillaries are markedly diminished from tonic contraction and muscular compression (8 a. m. to 4 p. m.), the parasites are no longer able to progress easily, and therefore accumulate.

* From the Department of Pathology and Research Medicine, Medical College of the State of South Carolina.

* Read before the Section on Pathology and Physiology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Smith, A. J., and Rivas, Damaso: The Early Diagnosis of Filariasis, South. M. J. **5**: 631, 1912.
2. Smith, A. J., and Rivas, Damaso: Notes Upon Human Filariasis, Am. J. Trop. Dis. & Prev. M. **2**: 361, 1914-1915.

Supporting the mechanical part played in this theory, Smith and Rivas have performed some experiments aiming at altering circulatory conditions and capillary caliber. They succeeded, at one time, in increasing the number of *Microfilaria loa* by giving a half ounce of brandy; at another, by a half hour's general exercise, and by compressing the hand in a glove, and placing the hand in warm water. They also determined that the venous drainage of an extremity showed fewer parasites than did the capillary circulation.

Manson[3] considers broadly that the periodic peripheral swarming of microfilariae is an adaptation on the part of the parasite to the biting habits of the intermediate host. Undoubtedly, the large numbers of *Microfilaria bancrofti* in the peripheral blood at night favor its entrance into the night biting *Culex fatigans*, but this does not explain the problem. Manson would believe that there is some physiologic product, the outcome of the activities of waking life, which either drives *Filaria nocturna* from the surface of the body during the day, or attracts it to certain internal organs, particularly to the lungs and large arteries.

Feeling that this chemotropic theory is rather unreasonable and that the demonstration of these embryos constantly in the peripheral blood has rendered it untenable, I have instituted a series of experiments in the human infection by *Filaria bancrofti*, and the dog infection by *Filaria immitis*, attempting to influence the number of embryos in capillary blood by circulatory alteration.

In all of these counts I have used the acetic acid method of concentration, taking 1 c.c. of blood in 10 c.c. of 2 per cent. acetic acid solution, centrifuging, washing and recentrifuging several times, spreading the sediment on a slide, and counting the whole number in the sediment.

NITROGLYCERIN EXPERIMENTS

EXPERIMENT 1.—*Human case of Filaria bancrofti.*—In J. S., an aged colored man with extreme arteriosclerosis, poor mentality, motor nervous disturbance, markedly enlarged right inguinal glands, hydrocele and general lymph gland enlargement, microfilariae were found in a drop of blood from the finger tip at 11 p. m.; none in the day time. Dec. 11, 1916, at 11 a. m. 245 microfilariae in 1 c.c. of blood from the finger tip were counted. I gave 1/100 grain of nitroglycerin hypodermically. At 11:30 a. m. 171 microfilariae were found in 1 c.c. of blood from the finger tip, a decrease of seventy-four, or 30 per cent. Dec. 13, 1916, at 11 a. m., I repeated the experiment and counted 201 per cubic centimeter before the administration of the nitroglycerin, and seventy-four per cubic centimeter twenty minutes after the administration, a decrease of 127, or 63 per cent. Dec. 19, 1916, at 11 p. m., I repeated the experiment, and counted 615 microfilariae per cubic centimeter before, and 615 per cubic centimeter twenty minutes after the administration of nitroglycerin.

EXPERIMENT 2.—*Human case of Filaria bancrofti.*—In T. R., a middle aged mulatto, showing chyluria, there were counted, Dec. 13, 1916, at 11 a. m., three microfilariae per cubic centimeter in the blood of the finger. I gave 1/100 grain of nitroglycerin hypodermically and, at 11:20 a. m., counted one microfilaria per cubic centimeter of blood from the finger. Dec. 19, 1916, at 11 p. m., I repeated the experiment and counted 382 microfilariae per cubic centimeter before, and 300 per cubic centimeter twenty minutes after the administration of the nitroglycerin, a decrease of eighty-two, or 21 per cent. Jan. 5, 1917, at 11 p. m., I repeated the experiment and counted 353 microfilariae per cubic centimeter before, and 259 per cubic centimeter after the administration, a decrease of ninety-four, or 26 per cent.

3. Manson, P.: On Filarial Periodicity, Brit. M. J. 2:644, 1899.

EXPERIMENT 3.—*Dog, infected with Filaria immitis.*—Dec. 17, 1917, at 11 a. m., there were counted 2,706 microfilariae per cubic centimeter in the blood from the ear. One one-hundredth grain of nitroglycerin was given hypodermically. At 11:15 a. m. there were 972 microfilariae per cubic centimeter in the blood from the ear, a decrease of 1,734, or 64 per cent. Dec. 19, 1917, at 11 a. m. the experiment was repeated, and 3,264 microfilariae were found per cubic centimeter before, and 3,264 per cubic centimeter five minutes after administration of nitroglycerin.

Jan. 5, 1917, at 11 a. m., the experiment was repeated. There were counted 3,172 before, and 1,620 after administration of the nitroglycerin, a decrease of 1,552, or 50 per cent.

Thus, after the administration of nitroglycerin, there resulted decreases in the number of both *Microfilaria bancrofti* and *Microfilaria immitis* in the peripheral capillary blood, varying from 21 per cent. to 64 per cent. In two experiments, one with *Microfilaria bancrofti* and one with *Microfilaria immitis*, the number remained the same in twenty and five minutes, respectively. I have recorded in my notes that the product used in these was old and its potency doubtful. It was not tested, but a fresh product was substituted. I interpret these results to indicate that relaxation of the vascular system, whether during the period of cutaneous prevalence or paucity, allows these parasites to pass more freely, and consequently their number in a given volume of blood decreases.

PITUITARY EXTRACT AND EPINEPHRIN EXPERIMENTS

EXPERIMENT 4.—*Human case.*—In J. S., Dec. 17, 1916, at 11 p. m., there were counted 531 microfilariae per cubic centimeter in blood from the finger. He was given pituitary extract hypodermically, and there were counted 665 microfilariae per cubic centimeter in the finger's blood at 11:10 p. m., an increase of 134, or 25 per cent.

EXPERIMENT 5.—*Human case.*—In T. R., Dec. 15, 1916, at 11 p. m., there were counted 227 microfilariae per cubic centimeter in the finger's blood before, and 334 ten minutes after the administration of pituitary extract, an increase of 107, or 47 per cent. Dec. 17, 1916, the experiment was repeated, and there were counted 138 per cubic centimeter before, and 364 per cubic centimeter twenty minutes after the administration of pituitary extract, an increase of 226, or 164 per cent.

EXPERIMENT 6.—*Dog, Filaria immitis.*—Oct. 29, 1917, at 11:55 a. m., 1,360 microfilariae were found per cubic centimeter in blood from the ear before, and 1,620 microfilariae per cubic centimeter in blood from the ear ten minutes after the administration of 1 c.c. of pituitary extract hypodermically, an increase of 260, or 20 per cent. At the same time, 1,056 per cubic centimeter were found in blood taken directly from a large ear vein. This confirms the observation of Smith and Rivas in *Filaria bancrofti* infection. The experiment was repeated, Oct. 31, 1917, at 12:30 p. m., and 1,294 microfilariae per cubic centimeter were found before, and 2,678 per cubic centimeter of ear's blood ten minutes after the administration of pituitary extract, an increase of 1,384, or 107 per cent.

Nov. 1, 1917, at 12:30 p. m., the experiment was repeated and there were counted 1,478 microfilariae per cubic centimeter in capillary blood from the ear, 1,272 per cubic centimeter in venous blood, and, ten minutes after the administration of pituitary extract, 2,196 in capillary and 724 in venous blood, an increase in the capillary blood of 718, or 48 per cent., and, at the same time, a decrease in the venous blood of 448, or 35 per cent., thus showing that the increase in the capillary blood was a process of accumulation or holding up, and not an additional influx.

The experiment was repeated, Nov. 2, 1917, at 11:20 a. m. One thousand nine hundred and twenty-two microfilariae per cubic centimeter were counted in the capillary blood before, and 2,160 per cubic centimeter ten minutes after the administration of epinephrin, an increase of 238, or 13 per cent. Twenty-minutes after the administration, 2,460 microfilariae per cubic centimeter were found in venous blood. It seems that prob-

ably by this time the parasites were being released into the veins. Unfortunately, capillary blood was not taken.

The experiment was repeated, Nov. 5, 1917, at 11:30 a. m., and 2,216 microfilariae per cubic centimeter of capillary blood were counted before, and 2,820 per cubic centimeter ten minutes after the administration of epinephrin, an increase of 603, or 27 per cent., and 3,228 per cubic centimeter twenty minutes after the administration, an increase of 1,012, or 45 per cent.

The experiment was repeated, Nov. 9, 1917, at 11 a. m. Two thousand three hundred and seventy-two per cubic centimeter of capillary blood were found before, and 3,512 thirty minutes after administration of epinephrin, an increase of 1,140, or 48 per cent., and 4,420 per cubic centimeter in capillary blood forty minutes after the administration, an increase of 2,048, or 86 per cent.

A dog was anesthetized with morphin and chlorbutanol, Jan. 12, 1918, at 11 a. m. There were counted 3,268 microfilariae per cubic centimeter in capillary blood before, and 4,738 per cubic centimeter in capillary blood ten minutes after the administration of epinephrin, an increase of 1,470, or 45 per cent.

Therefore, after the administration of epinephrin and pituitary extract, there resulted increases in the number of both *Microfilaria bancrofti* and *Microfilaria immitis* in the peripheral capillary blood, varying from 13 to 164 per cent. There occurred also a decrease of 35 per cent. in the venous drainage of an area at the same time as an increase in the capillary blood of 48 per cent. and a subsequent venous increase. I interpret these observations to indicate that an increase in the tone of the vascular system, whether during the period of peripheral prevalence or paucity, prevents the free passage of these parasites through the capillaries; that, therefore, their number in a given volume of capillary blood increases, and that during this time the number getting into the venous drainage is cut down, but increases after a time, and especially when the tone begins to wear off.

EFFECT OF SLEEP

The effect of sleep on the peripheral prevalence of *Microfilaria immitis* was shown in the following experiment:

EXPERIMENT 7.—Dog 1, was kept awake from 11:20 a. m. to 1 a. m. following, and the capillary blood showed, at 11:20 a. m., 2,851 microfilariae per cubic centimeter; at 1 p. m., 2,900; at 3:20 p. m., 3,217; at 8 p. m., 2,736; at 11 p. m., 2,352, and at 1 a. m., 2,264.

In Dog 1, awake at 1 p. m., there was a count of 2,512 in the capillary blood, and, in Dog 1, asleep at 3 p. m., a count of 4,300 in the capillary blood, an increase of 71 per cent., which is comparable to but not as large, even, as the increase brought about by pituitary extract and epinephrin administration.

It is interesting to note that when the dog was kept awake there was an increase comparable to that of *Microfilaria loa* in the afternoon, and then a decrease similar to that in *Microfilaria loa* infection in the night hours. *Microfilaria immitis* is smaller in transverse diameter than *Microfilaria bancrofti* and *Microfilaria loa* embryos. As a consequence, it gets past the capillary barrier with more ease and shows constantly more in peripheral blood. There is, however, a period of relative peripheral prevalence directly connected with sleep, whether at night or in the day, which can be altered by keeping the dog awake, and the number of microfilariae in the peripheral capillary and venous blood is subject to the same natural and artificial alterations as is that of the human parasites.

In this connection, it would be interesting to know whether the acetic acid concentration method would not show a periodicity of the smaller human filaria embryos, *Filaria perstans* and *Filaria demarquayi*, which are to be found by old methods of examination constantly in the peripheral blood.

EFFECT OF COLLAPSE OF THE LUNG

EXPERIMENT 8.—Dog 1, anesthetized with chlorbutanol and morphin gave a count of 3,268 microfilariae in the peripheral capillary blood.

One lung was artificially collapsed by the introduction of air into the pleural sac. Five minutes later the dog died, and the thorax was opened. The uncollapsed lung showed 8,962 microfilariae in the capillary blood; the collapsed lung, 350,000 per cubic centimeter, this being a rough count as there were so many it could not be made exact; the left ventricle, 7,365, and the right ventricle, 10,778. Unfortunately, the bloods taken from various other parts were allowed to clot, and were consequently useless for counting.

This is one of the most striking of the experiments. The capillary circulation in the lungs is more of a barrier to the passage of these parasites in both *Microfilaria bancrofti* and *Microfilaria immitis* infections than is the peripheral capillary system, as is evidenced by the larger numbers in the uncollapsed lung of this dog and in Manson's case of *Microfilaria bancrofti* infection, which came to necropsy, and also in a case in which I made a postmortem examination. As shown by my necropsy, this appears to be not simply a retirement from the periphery to the lungs during the period of peripheral paucity. Apparently the lung filter is more or less constantly difficult of their passage. The collapse of the lung seems to have created a pressure on the capillaries and to have rendered them relatively impassable, even by this small worm, and to have led to an enormous accumulation, showing an increase over the number in the other lung of 3,805 per cent. in five minutes.

It is to be noted also that the number getting through the lungs and showing in the left heart was even less per cubic centimeter than in the uncollapsed lung.

I would interpret this experiment as showing what an influence on the number of these worms a purely mechanical capillary barrier may have.

HUMAN NECROPSY

Manson has reported a necropsy of a subject of *Filaria bancrofti* infection who died suddenly at 8 a. m., in whom he found prodigious numbers in the lungs, very many in the pulmonary artery and vein, large numbers in the carotid artery, a large number in clots from the left ventricle and aorta, many in the heart muscle, and a few in other places. From this he concludes that *Filaria nocturna*, during its temporary absence from the cutaneous circulation, retires to the localities in which he found large numbers.

Sept. 16, 1916, I performed a necropsy on a subject of *Filaria bancrofti* infection who died of pellagra at about 2 a. m. I was not at the time using the acetic acid method of counting, but I recorded large numbers of microfilariae in the lungs, and a few in the blood of the kidney, spleen, liver, heart, retroperitoneal lymph glands and large vessels. This confirms Manson's observation in regard to the lungs, but not in regard to the heart and large vessels. Neither of these cases furnishes positive reliable evidence of the distribution except in a rough way. I expect interesting exact data to be obtained from a repetition of postmortem exam-

inations by the use of the acetic acid method of counting. I can see no means by which the microfilaria could maintain itself against the current in the large vessels, particularly such as the aorta and carotid artery.

INTRAVITAM OBSERVATIONS ON MICROFILARIA IMMITIS

EXPERIMENT 9.—Dog 1 was anesthetized, the abdomen opened, and the omentum drawn over the stage of a microscope. Considerable injury was done and it was difficult to keep the membrane warm and moist. Consequently, the capillary circulation was largely sluggish or stopped. Three microfilariae were seen wriggling with the stream, faster than the blood was moving, in a large capillary. One was seen to progress against the stream of a small capillary. Two went slowly forward through a capillary carrying a single line of cells. These were wriggling, and the blood cells passed by them in their convolutions. This explains why even large numbers do not prevent the passage of blood in the small capillaries. The one progressing against the stream and those going forward faster than the sluggish stream appeared to push themselves against the wall. Apparently, therefore, they have some propulsive power even in the capillaries. It was planned to observe the action of drugs on the vessels, and the effect on the passage of the parasite, but the technic will have to be perfected before this can be done. I expect this measure, however, to furnish interesting information concerning the passage of microfilariae through the capillaries.

This experiment appears to show that the parasite does not perform simply as a foreign body but that its own activity is to some extent concerned in its passage of the finer capillaries, as was conjectured by Smith and Rivas.

FURTHER DRUG ADMINISTRATION

Incidentally, it may be mentioned that in the human experiments ergot and caffein were administered without altering numbers, that emetin was given hypodermically with no effect on the parasite, and that while oil of chenopodium given intravenously in considerable doses in the dog killed the embryo, doses compatible with the life of the animal had no apparent effect, and neither did alimentary administration.

SUMMARY

Fully realizing the limitations to be placed on interpretations of the effect on the capillary system of the drugs used, and that these experiments need confirmation and elaboration, I believe that these observations strongly support the mechanical theory of Smith and Rivas in regard to filarial periodicity, and that the reasonable explanation of filarial periodicity is furnished by some such mechanical proposition, in which the caliber of the capillaries plays the main rôle, with the motility of the microfilariae playing a lesser part, so that the peripheral prevalence of microfilariae is largely dependent on the difficulty of passage of the peripheral capillaries during periodic tonicity and is directly related to sleep and wakefulness, but is affected to an extent varying with the size and the motility of the parasite, the pulmonary capillary system relative to these two conditions playing the part of a more or less constant barrier, but one probably more effective during the hours of the tone of activity.

CONCLUSIONS

1. The acetic acid concentration method of Smith and Rivas furnishes an exact method of counting microfilariae, and only by exact counts can the number in a given part of the body be accurately determined.

2. The administration of nitroglycerin is followed by a decrease in the number of *Microfilaria bancrofti* and of *Microfilaria immitis* in the peripheral capillary blood, during both periods of peripheral prevalence and paucity.

3. The administration of epinephrin or pituitary extract is followed by an increase in the number of *Microfilaria bancrofti* and of *Microfilaria immitis* in the peripheral capillary blood, during the periods both of cutaneous prevalence and of cutaneous paucity.

4. The period of cutaneous prevalence of *Microfilaria immitis* is directly connected with sleep.

5. In the collapsed lung, *Microfilaria immitis* accumulates in enormous numbers.

6. During the period of cutaneous paucity of both *Microfilaria bancrofti* and *Microfilaria immitis*, there are large numbers in the lungs.

7. The venous drainage of a part contains fewer microfilariae than the capillaries, there are still fewer when accumulation in the capillaries is produced by vascular stimulation, and following this capillary accumulation the venous drainage contains larger numbers.

TYPHOID, PARATYPHOID AND DYSENTERY CARRIERS AMONG RETURNING OVERSEAS TROOPS

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HOBOKEN, N. J.

Circular 69, issued in February, 1919, by the chief surgeon of the American Expeditionary Forces stated that during the autumn and early winter of 1918 the incidence of typhoid and paratyphoid fevers among the American troops overseas had shown a noteworthy increase. More than 874 cases of typhoid and paratyphoid were reported between October 1 and February 1. This number, while not large in itself, represented an unexpected degree of infection among vaccinated individuals. The questions that presented themselves were: What percentage of the convalescents would become chronic carriers, and to what extent would these returning troops prove a menace to the home population?

It was therefore planned to examine the stools of a sufficient number of returning troops to include members of practically all divisions and at the same time to reduce the percentage of error. This laboratory seemed to be particularly well adapted for this purpose, not only on account of its facilities, but especially because of the fact that an intensive survey for intestinal parasites was being conducted among all homecoming men by Major C. A. Kofoid, S. C., U. S. Army.

The routine for the collection and examination of specimens was as follows:

The specimen of stool was placed in a cardboard drug can with tin bottom and top and immediately brought from the ward to the laboratory. A small portion (about the size of a pea) was thoroughly emulsified in 10 c.c. of nutrient broth and the tube placed in the incubator for two hours, during which time the larger particles settled to the bottom. A loopful of the suspension was then streaked on Endo agar and the plates were incubated over night. All colorless colonies were then fished to Russell's double sugar agar,

the slants incubated over night, and all cultures showing the characteristic reactions of typhoid, paratyphoid or dysentery bacilli were subcultivated on plain agar. Tests were then made for motility, and the various carbohydrate reactions were observed. Macroscopic agglutination tests were carried out with potent immune serums in a 1:100 dilution. The cultures were carried on plain agar slants for at least ten generations for the purpose of increasing their agglutinability, if possible. Before the final diagnosis was made, all cultures were plated, and single colonies were fished to plain agar slants. The carbohydrate fermentations were again tested in freshly prepared and incubated Hiss serum waters, their motility or absence of it verified in broth and Hiss semisolid medium, and their agglutinability carefully determined with the different serums in varying dilutions.

Of all the strains isolated from the stools of 1,000 men, only two gave sufficiently definite reactions to warrant their identification as true pathogens. One culture proved to be *Bacillus dysenteriae* of the Hiss-Russel-Y type while the other was *Bacillus dysenteriae* of the Flexner type. Neither of the men from whom these organisms were isolated had been or was suffering from bacillary dysentery. In addition to the above mentioned two, twenty-eight strains of nonlactose fermenters were isolated which gave carbohydrate fermentations characteristic of the types sought, but which agglutinated with their respective serums in dilutions of 1:100 and at most at 1:500. Since the serums used were of high titer (*B. typhosus* serum 1:32,000, *B. paratyphosus* A and B serums 1:16,000, and *B. dysenteriae* serum 1:4,000), and because repeated subcultivating on agar failed to increase the agglutinability of these strains, these organisms were finally classed as intermediates. Eleven other strains, which on preliminary tests fermented only glucose and mannite with gas and agglutinated with the paratyphoid serums in dilutions of 1:100 and 1:500, later fermented lactose after prolonged incubation. These were undoubtedly "slow colons." Their detection emphasizes the necessity of long incubation (two weeks) of the lactose serum water and litmus milk cultures, and also of carrying out agglutination tests in higher dilutions, before making any final bacteriologic diagnosis.

COMMENT

In only two individuals out of 1,000 returning overseas troops were any of the usual pathogenic intestinal gram-negative bacilli found. These men were found to be carrying dysentery bacilli of the Hiss-Russel-Y and Flexner types, respectively. No typhoid or paratyphoid bacilli were isolated. Therefore, only 0.2 per cent. of all men examined were found to be carriers. By way of comparison, it is interesting to mention the number of clinical cases of similar infections among returning troops. Of the 50,747 men passing through the hospitals of the Port of Embarkation during March, April and May, 1919 (the period covered by this bacteriologic study), six had typhoid fever, and one had dysentery of the Hiss-Russel-Y type, with no cases of paratyphoid fever. These give a percentage of 0.014 per cent.

No doubt, had time permitted the cultivating of all stools on brilliant green agar as well as on the Endo plates used, the isolations might have been greater in number. The method employed, however, was deemed to be sufficient to detect the great majority of infected individuals. The results as they stand, taken in conjunction with the record of clinical cases, would seem to show that such infections as had occurred in the American Expeditionary Forces during the autumn and early winter of 1918 had remained limited and had given rise to no aftermath of carriers.

DIAGNOSTIC INCISION OF TUMORS

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It is now generally recognized that to obtain satisfactory results in the treatment of cancer, an early diagnosis is necessary; if an operation for cancer is to be successful, the diagnosis must be made almost always before the classic symptoms appear, often a matter of great difficulty. It is imperative, also, that no time be lost in making a decision and in planning the operation, for the scope of the latter, when the tumor is benign, is entirely different from that when the growth is malignant, and it is often most difficult to change during the course of the operation from one type of procedure to another. For instance, the extensive exposure and preliminary vascular ligation which may be necessary in a resection for cancer of the tongue, jaw, uterus or rectum are quite unnecessary in the case of a benign tumor, and to change the whole scheme after the operation has been begun may require more time than the patient's strength permits. An abdominal hysterectomy for fibromyoma may reveal carcinoma or sarcoma of the uterus, and the additional dissection required, if the proper operation is to be performed, may impose great risk from shock or hemorrhage on the patient, while a two-stage procedure is out of the question if a cure is to be obtained. The examples cited show that it is of the utmost importance that a correct diagnosis be had before operation; but often this is impossible without microscopic examination of the tumor.

EXCISION FOR MICROSCOPIC EXAMINATION

The procedure of excising a small fragment of a tumor for examination has long been employed by the dermatologists as a means for obtaining a definite diagnosis; but among the surgeons, opinions are not generally in accord, and of late years the practice of diagnostic excision has been subjected to much criticism, some of it entirely from a theoretical point of view, and some based on a moderate number of cases in which such incision was supposed to have incited the tumor to more rapid growth, or to have led to more widespread metastasis. The discussion culminated two years ago in a very bitter series of editorials in the *Medical Record*,[1] criticizing the action of the Department of Health of New York City and of the Cancer Commission of Harvard University in offering facilities for the diagnosis of excised fragments of tumors. The anonymous writer of these editorials went so far as to state that the incision of a tumor twenty-four or forty-eight hours before its removal was "little short of a crime," and that a physician making such an incision would have "no defense whatever if the heirs of his patient should bring a malpractice suit."

The whole question has been well discussed by Ewing,[2] who thinks biopsy justified if a diagnosis can-

1. M. Rec. **91**: 156 (Jan. 27); 286 (Feb. 17); 371 (March 3); 731 (April 28) 1917; ibid **92**: 728 (Oct. 27); 1083 (Dec. 22) 1917.
2. Ewing, James: The Incision of Tumors for Diagnosis, New York M. J. **102**: 10 (July 3) 1915.

not be made otherwise; while Greenough[3] has published the results of a questionary, the general opinion which he obtained from surgeons being in condemnation of incision of the tumor under any circumstances. Bainbridge[4] has reviewed this aspect of the literature of the subject and has brought forward some cases which he believes illustrate the dangers of diagnostic incision.

It cannot be denied that in the vast majority of instances of cancer presenting for operative treatment, the growth has reached such a point, unfortunately for the patient, that a surgeon well trained in pathology can make a diagnosis without the help of the microscope; but the knowledge possessed by a surgeon so trained is not universal, and I have seen many mutilating operations performed on patients with a variety of lesions which had been diagnosed clinically as cancer, but which were not malignant. These include three cases of complete excision of the tongue and a number of amputations of extremities. Again, there is still a tendency to treat ulcerated lesions of the mouth with medicine over too long a period, especially if the patient gives a positive Wassermann reaction. Unquestionably, arsphenamin, by destroying the spirochetal organisms so frequent in the buccal cavity, does produce a certain amount of disinfection of the surface and, in consequence, some deceptive improvement, during which time deep extension of the tumor may take place.

On the other hand, the statement that exploratory incision into a tumor is invariably followed by local spreading or metastasis to regional lymph-nodes is not true. I have seen a number of cases of epithelioma of the tongue and the lip in which diagnostic fragments were removed without injurious result, the patient being alive and well from five to eight years after; and I have also seen one case of epithelioma of the tongue in which only partial extirpation was performed, and three weeks were allowed to elapse before a second operation took place; but, nevertheless, the patient is now, at the end of five years, alive and well.

The theoretical danger of opening up blood vessels has never seemed to me to have the extraordinary weight given it by clinicians, as the blood flow tends to wash particles out of the vessels cut, rather than into them, and the body is unquestionably able to take care of a certain number of free cancer cells, as Schmidt[5] and others have shown. Furthermore, the effect of opening the lymph channels has not been studied scientifically. For example, it is usually assumed that the recurrences of the tumor along the scar, so frequent after amputation of the breast, are due to opening lymph channels; but experimental evidence makes it seem much more probable that both the handling of the tumor before operation, when it may be palpated by a dozen physicians for diagnostic purposes, and the manipulation of the organ during excision are much more likely to be the cause of the distribution of the tumor particles. The frequency with which hemorrhagic areas are found in tumors removed by operation and that with which freshly dislodged cancer particles can be demonstrated in the blood and lymph vessels suggests this explanation. The extraordinary dissemination produced by the massage treatment of tumors of the breast, and the ease with which cancer cells can be distributed through the vascular system of a mouse whose cancer has been gently massaged for a minute or less, show that manipulation of a tumor is a very dangerous procedure.

3. Greenough, R. B.: Handling of Early and Doubtful Cases of Cancer, Ann. Surg. **66**: 385 (Oct. 17) 1917.

4. Bainbridge, W. S.: Biopsy and Cancer—a Review, M. Rec. **91**: 705 (April 28) 1917.

5. Schmidt, M. B.: Der Verbreitungswege der Karzinome und die Beziehung generalisierter Sarkome zu den leukämischen Neubildungen, Jena, Gustav Fischer, 1903.

EXPERIMENTS

The subject seemed an ideal one for attack from the experimental side. The occurrence of metastasis in human cancer depends on the size of the cells, the extent and situation of the tumor, the relationship between it and the lymphatic drainage system, and the amount of massage, both from the patient's handling of the growth and from muscular action compressing it; all these add to the problem in man variables whose values cannot be weighed. On the other hand, the use of one of the well known transplantable tumors, such as the Flexner-Jobling rat carcinoma, eliminates any question as to the size of the cells, the situation of the tumor, and the possibility of massage, the growth being implanted always in the same portion of the animal and at a site where it is not liable to be rubbed during the animal's movements. It is possible, also, to obtain accurate necropsy controls on animals whose tumors have been excised, a thing which is not possible in human cancer.

So far as I am aware, the question has not been approached experimentally except by Tyzzer,[6] who, in 1913, published a very important paper, chiefly concerned, however, with other phases of the metastasis problem. Apparently he did not excise small fragments of the tumors, but attempted a fairly extensive removal, such as would represent an incomplete operation, and he reached the conclusion that incomplete operations did not increase the incidence of metastasis. The number of animals used was small, and the work was done with a carcinoma in the Japanese waltzing mouse, the growth having a number of peculiarities, one of which was that the lymph-nodes were never involved.

For our experiments, a rat tumor which does metastasize generally was selected. The Flexner-Jobling rat carcinoma employed is an adenocarcinoma, which frequently metastasizes to the lungs, blood vessels and regional lymph-nodes. The inoculated tumors tend to remain discrete when a small graft is placed in the loose subcutaneous tissue of the side, and clean incision does not cause local spreading in the tissue planes. In suitable animals, the tumors take in a large percentage and grow progressively. The following experiments were carried out with the valuable assistance of my colleagues, Dr. Frederick D. Bullock and Dr. George L. Rhodenburg.

White rats, totaling 673, were inoculated with the Flexner-Jobling rat carcinoma, and divided into three groups. From those in Group 1 a portion of each tumor was excised aseptically, and the skin was then sutured over the wound. After ten to twelve days, this being the maximum time required to obtain a microscopic diagnosis, the entire tumor was carefully excised in order that the formation of metastasis might be checked. The animals were killed and examined from three to four weeks later. From the second group of animals, inoculated at the same time, the tumors were removed on the same day that the tumors were removed from Group 1, and the animals were killed

6. Tyzzer, E. E.: Factors in the Production and Growth of Tumor Metastases, J. M. Res. **23**: 309 (July) 1913.

and examined from three to four weeks later. This group thus formed a check on the first, for if the number of metastases was the same in both series, it would be evident that the incision of the tumors had not increased the amount of metastasis, since in both series the tumors had been in the animal body for exactly the same length of time and had been removed by exactly the same method. Great care was taken with the surgical technic, so as to avoid massaging the tumors, which, as Tyzzer[6] has shown, and as more extensive experiments in my own laboratory have also demonstrated, is a most efficient means for distributing tumor particles throughout the body. The third group of inoculated animals was killed at the same time that the others were killed, and formed a check on the metastasizing power of the tumor.

RESULTS

The results may be thus summarized:

The average percentage of metastases in all the animals of Group 1, in which probatory excision was made, was 22.2.

The average percentage of metastases in the animals of Group 2, in which the tumors were removed without previous incision, was 21.8.

In the animals in Group 3, which were allowed to go without any operative procedure, the percentage of metastases was 32.2. These figures include metastases in the lungs and in the axillary, superior mediastinal, mediastinal, and peritoneal lymph-nodes.

Control Series 3 shows that the frequency of metastasis is a function of the time that the tumor remains in the body, and again emphasizes the well known fact that a malignant tumor should be removed as soon as possible after the diagnosis is made.

A similar experiment with the Crocker Fund rat sarcoma No. 10 on 384 animals also showed no increase in metastasis as a result of the incision of the tumor.

CONCLUSIONS

It is evident that this experiment demonstrates that in white rats bearing the Flexner-Jobling rat carcinoma, or the Crocker Fund rat sarcoma No. 10, metastasis is not increased when the tumor is incised, a fragment removed aseptically, and the growth allowed to remain in the animal for from ten to twelve days thereafter.

It permits the deduction, also, that human tumors are probably not widely distributed by incision, as has been thought, and that, therefore, when these tumors are situated in such portions of the body that a mutilating or highly dangerous operation is necessary for their removal, they should be examined microscopically *if a diagnosis can be made in no other way.*

It is preferable that such diagnosis be made immediately by frozen section, if facilities are available, so that if necessary the operation can be continued under the same anesthesia; but the patient's future is not necessarily compromised if a small fragment is removed, the wound closed, and the operation proceeded with the moment a microscopic diagnosis is obtained. With modern rapid methods of preparation of sections, the lapse of time need not be more than three or four days.[7]

1145 Amsterdam Avenue.

7. The extensive tables covering these and other similar experiments and a detailed analysis of the results will appear in a future number of the Journal of Cancer Research.

Clinical Notes, Suggestions, and New Instruments

THE REMOVAL OF FOREIGN BODIES FROM THE TISSUES BY THE USE OF TRANSILLUMINATION

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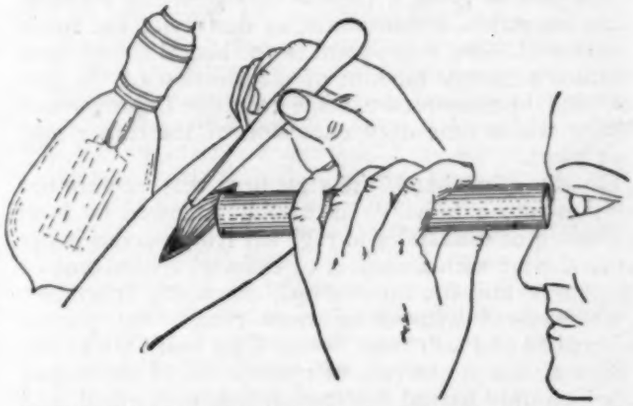
The difficulty often encountered in attempting to remove foreign bodies from the tissues is well known. Even when roentgenograms are at hand or when fluoroscopy has been done, there is frequently great difficulty in removing the foreign body.

By the use of transillumination, any foreign body that will cast a shadow may be located in a surprisingly short time.

Having cut down to the supposed location of the foreign body and having arranged the light, the operator looks through a tube at the tissues, which may be held up or otherwise suitably manipulated. A dark room is unnecessary. When once the foreign body is located, it is a simple matter to remove it. Reference to the illustration will make the method clear.



Method of locating and removing foreign bodies from the tissues by the use of transillumination.

The tube may be of any suitable material, brass or other metal or a darkened test tube; a roll of paper may be used in an emergency.

The angle at which the tube is used may be varied to meet conditions. Even deeply embedded material may be located frequently without the necessity of putting the end of the tube into the wound.

407 Medical Building.

HOW TO MAKE EVEN POOR ADHESIVE PLASTER ADHERE

A. L. Soresi, M.D., New York

During the war we were confronted with numerous compound exposed fractures that needed continuous traction, and traction was made exceedingly difficult in many cases for two reasons: The skin was badly inflamed, being traumatized in most cases so that the areas of healthy skin to which to stick the plaster were very scanty, and this was aggravated by the fact that some of the wounds, being badly infected, had an abundant secretion that would soak the plaster and diminish its sticking qualities. Also, the adhesive plaster was at times of very poor quality.

We resorted to a simple plan, which can be employed easily and conveniently in all cases requiring medication with adhesive plaster. We took the common rubber cement that is used in patching tires, diluted it in about ten parts of ether, and painted the area of skin on which we intended to apply the plaster with it and then applied the plaster in the usual manner, after having cleaned and dried the skin. Even the poorest plaster adhered immediately and remained adherent for a long time. If the secretion was very abundant,

we painted with the same rubber solution the outside of the plaster after the plaster had been applied, so as to make the cloth waterproof by the application of a thin coat of rubber. Incidentally, it may be stated that the same rubber solution with ether has been applied to the skin in order to prepare it for operation, instead of tincture of iodin, with very satisfactory results.

The reason adhesive plaster adheres better if the skin is painted with a solution of rubber is that the solution of rubber and ether adheres strongly to the skin, and naturally the adhesive plaster will in its turn adhere firmly to the rubber that covers the skin.

47 East Fifty-Seventh Street.

A METHOD OF MOUNTING ANATOMIC AND PATHOLOGIC SPECIMENS IN GELATIN

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The method here described is one by means of which specimens may be mounted between glass plates of any desired thickness or any size, depending on the character of the specimens.

1. The plates of glass are separated by strips of glass of any desired thickness. The strips should be one-half inch wide for ordinary work. For small or larger specimens, narrower or wider strips should be used.

2. Strips with square ends are cut the desired length by employing a piece of glass, the width of which is exactly equal to the length of the strips desired. An ordinary glass cutter and a draftsman's right angle rule or triangle are all that are required.

3. The strips are broken by holding the piece of glass in the left hand with the cut line down; then with a few swift, sharp strokes of the reverse end of the glass cutter, the glass opposite the cut line is fractured, and the strip is easily removed. As many strips as are needed may be cut.

4. The strips are then attached to the margins of the glass plate by means of Canada balsam from which the volatile principles have been driven off by heat. Optical houses can provide this material in stick form. A burning set employed by storage battery men is very effective in attaching the glass strips. A strip should be left out at one end.

5. The specimen or specimens are then attached to the plate by means of warm gelatin, in any position desired. They are kept in a horizontal position until the gelatin sets; then the plate with the specimens is immersed in liquor formaldehydi in order to render the gelatin insoluble and thus prevent the slipping of the specimen when mounted in warm gelatin.

6. Next the exposed side of the specimens is covered by attaching a glass plate to the glass frame with the volatilized Canada balsam.

7. After this the mounting process is finished by setting the glass case, with its contained specimens, in warm water. Liquid gelatin of any desired consistency is poured by means of a funnel into the glass case through the end that has been left open. The warm water prevents the gelatin's setting until all of the spaces have been filled and the air bubbles forced to the top of the gelatin. If the colors of the specimens have been preserved by Kaiserling's method, a jelly is prepared by adding gelatin, ten parts by weight to the third solution in which the specimens ordinarily are kept: water, 900 c.c.; glycerin, 540 c.c.; sodium acetate, 270 gm. A 1 per cent. solution of phenol (carbolic acid) is used for a preservative.

The gelatin should stop at a line corresponding to the inner edge of the glass strip that will be sealed in the end after the gelatin has solidified, and the exposed portion rendered insoluble by immersion in liquor formaldehydi. With care the glass case can be rendered air tight by closing the end with a strip of glass and the Canada balsam (stick).

8. Specimens can be labeled in a very simple manner. After the specimen is attached to the glass as described, the glass cover is placed in accurate position. With pen and drawing ink, ruled lines are drawn to parts that are indicated in printed letters. The cover glass is then removed and the inside thoroughly cleansed and the ruled lines and names traced through the glass with water-proof ink. Fine lines can be made by using black silkworm gut attached to the inside by means of thick gelatin. The lines and names are much plainer after they have been transferred to the inside of the cover glass. This is true, too, of the specimens when viewed through glass. They are mounted as described before.

ADVANTAGES

1. This method does away with large containers, such as bottles and jars, for small specimens.

2. It is very difficult to see a specimen in a bottle, and it is impossible to study it without taking it out, which will often lead to destruction. With this method the specimen is immobilized between two glass plates, is plainly visible and can be carefully studied without danger of destruction.

3. This rendering delicate specimens, such as embryos and biologic material, indestructible makes this method a great time saver to the instructor who wishes to use such material for teaching purposes, as he can use this material year after year without fear of having it destroyed.

4. Preservation of cross-sections of embryos, developmental stages of fishes, tadpoles, sections of brain, injected, etc., can be had with the utmost satisfaction.

5. Specimens can be filed away classified like lantern slides.

6. By using plate glass, even sections of the adult human being can be preserved.

7. Specimens preserved in Kaiserling's solution can be mounted in this way and kept without losing their color.

8. This method can be used for displaying commercial products as well.

9. The specimens can be projected on the screen like any opaque objects, thus making it possible to use material at scientific meetings that could not be used otherwise.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

CULTURE-LAC.—A culture of *Bacillus bulgaricus* in whey marketed in bottles containing about 4 fluidounces.

Actions and Uses.—Culture-Lac is adapted both for internal and external use. See general article, Lactic Acid-Producing Organisms and Preparations (New and Nonofficial Remedies, 1919, p. 155).

Dosage.—From 4 to 8 Cc. (from 1 to 2 fluidrachms) in sweetened water one-half hour before meals. For infants 4 Cc. (1 fluidrachm) every two or three hours as directed by the physician. The date of issue is stated on each bottle.

Manufactured by the Geck Laboratory, New York. No U. S. patent. U. S. trademark applied for.

Maggots in the Ear.—A full blooded Indian, aged 21, came to my office one evening, stating that on the previous afternoon a fly lit on his cheek, that he brushed it away but knocked it into his ear, and it crawled into the auditory canal. He tried to dislodge it but was unable to do so, although he thinks it flew out again in a few minutes. At 3 o'clock the next morning he was awakened by a severe earache, and later his wife got fourteen maggots out of his ear. On examination I saw moving about—and easily extracted—some maggots with small forceps. I then washed out the ear with boric acid solution and obtained at least seventy-five more maggots. They were about 2 mm. in length, and quite thin. The patient had no further trouble.—OTTO H. G. ROSENKRANZ, M.D., Hoopa, Calif.

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SATURDAY, SEPTEMBER 6, 1919

ANOXEMIA, OR OXYGEN DEFICIENCY, AND ABNORMAL RESPIRATION IN CERTAIN DISEASES

It commonly happens that when an important discovery is made in some field of science, as for example when a cause for a familiar phenomenon is ascertained, attention is at once diverted toward this to the exclusion of all other explanations or possible contributory causes. This has been the experience in the study of the regulation of respiration. Fifteen years ago the nervous mechanism of regulation, particularly the so-called Hering-Breuer reflex, was the predominant feature of all discussions of respiratory function. No sooner, however, had Haldane and Priestley[1] given their classic demonstration, in 1905, of the fundamental dominance of chemical factors in the control of breathing than they became the center of interest. Although in the earlier days the stimulus to augmented respiration was sought in a lack of oxygen, it has been recognized for some time, as the result of Haldane and Priestley's work, that ordinarily the respiration is regulated with the utmost delicacy in correspondence with the carbon dioxid tension of the blood passing through the respiratory center; and it is now the generally accepted opinion that what the center actually responds to is increased hydrogen ion concentration.

Largely owing to further investigations of Haldane and his English collaborators,[2] the effects of a shortage of oxygen are known as well as the response to accumulating carbon dioxid. Whereas the latter increases the depth of respiration and the pulmonary ventilation without essentially altering its rate, the effect of want of oxygen is to increase the rate rather than the depth. When the anoxemia, or deficiency of oxygen in the circulating medium, becomes pronounced, the respiratory center may give rise to a peculiar periodicity of the breathing. Finally, when the proportion of oxygen is still further reduced, this effect may be replaced by a very rapid, shallow type of respiration. Haldane, Meakins and Priestley point out that in such conditions a very dangerous vicious circle tends to be set up. Want of oxygen in the inspired air causes shallow breathing, which in turn intensifies the anoxemia. There are variations in the mode of response of different persons. In some, a lowered threshold for stimulation by carbonic acid results in a hyperpnea that tends to postpone the dangerous effects of oxygen want by the increased efficiency of the lung ventilation. The English investigators maintain that those who react to want of oxygen preeminently by shallow breathing will be more seriously affected under conditions of lowered barometric pressure than those whose reaction involves a great alteration of carbonic acid threshold. This, they add, would seem to afford an explanation of the much greater liability of some persons over others to mountain sickness and aviator's disease.

In war-time studies of patients suffering from what is frequently designated as "irritable heart," "soldiers' heart" or "effort syndrome," at the Duchess of Connaught's Red Cross Hospital, Haldane, Meakins and Priestley[3] have found that in addition to breathlessness on exertion, rapid pulse, exhaustion, fainting attacks and irritability, these sick invariably show a remarkable type of breathing. The respiration is rapid (from 20 to 60 or more per minute) and shallow (250 to 350 c.c. or thereabouts), and, on exertion, the rate increases very abnormally while the increase in depth is abnormally small. These effects are strictly comparable to the symptoms already described for intense anoxemia. The correspondence is confirmed by the observation at the army hospital that, when they are breathing oxygen, the patients are able to do an amount of muscular work that is quite beyond their powers when they breathe air only, and they state emphatically that the oxygen relieves their subjective symptoms.

Special experiments conducted by Haldane and his army collaborators have, indeed, shown that abnormal shallowness in breathing (such as is so often observed in cases of irritable heart) causes uneven ventilation of the lungs. This in turn brings about anoxemia and consequently periodic respiration and other symptoms, as has been explained. Abnormality of breathing of the shallow, quick type points to a deficiency of oxygen, just as deepening of respiration suggests accumulation of carbon dioxid in the organism. Whether the anoxemia is attributable to impairment of the circulation or to factors which prevent adequate lung ventilation, the indication for immediate relief is the same. Imperfect oxygenation may arise, as Haldane and others[3] have pointed out, in any condition such as bronchitis, asthma or emphysema, in which the even distribution of air in the lungs is hindered by local narrowing of bronchi or local impairment of the lung elasticity. They add that when shallow breathing,

1. Haldane, J. S., and Priestley, J. G.: J. Physiol. **32**: 225, 1905.
2. Haldane, J. S.; Meakins, J. C., and Priestley, J. G.: The Respiratory Response to Anoxemia, J. Physiol. **52**: 420 (May 20) 1919.
3. Haldane J. S.; Meakins J. C., and Priestley, J. G.: The Effects of Shallow Breathing, J. Physiol. **52**: 433 (May 20) 1919.

resulting as a secondary nervous effect of the anoxemia, is superposed on the mechanical hindrance to even distribution of air, the anoxemia must become much more serious. An entirely new light is thus thrown on the symptoms. In any event, oxygen therapy thus comes into a new prominence.

ARTIFICIAL PNEUMOTHORAX

During the twenty-five centuries that have elapsed since Greek, and possibly Hindu, physicians cured tuberculosis by rest and a proper diet, at least two things of real value have been added to the treatment: more rest and more attention to the diet. The phthisiotherapeutist must be an optimist. Given suitable economic conditions that enable him to enforce his regimen of rest and diet, he can frequently make a favorable prognosis. Certainly few infectious diseases offer the body a greater opportunity for successful resistance than does tuberculosis. The wisdom of the policy of noninterference has become so generally recognized that we are today perhaps overcautious and too conservative in our judgment of procedures that savor of active intervention. Among these is the use of artificial pneumothorax. Developed as an adjunct of rest therapy, it offers, in its ideal utilization, the utmost that we can expect from absolute rest.

Aside from the reluctance to depart from the policy of letting well enough alone, there is an impression among many physicians that the procedure is dangerous. Untoward results, however, have been limited virtually to the cases in which too large amounts of gas have been injected at the early fillings. These larger amounts of gas have been given on the false assumption that if a little gas is good, more will be better. Forlanini himself, in his first publications, warned against the use of large amounts of gas. He limited the amount injected at any one sitting to from 100 to 300 c.c., but the early advocates of his method in this country (Murphy) and in Germany (Brauer) used larger amounts with admittedly spectacular but occasionally unfortunate results.

Murphy, however, laid great emphasis on the use of artificial pneumothorax earlier in the course of the disease. Then its effect might be assumed to be curative rather than merely palliative, as is so frequently the case when used in tuberculous patients in the utterly hopeless terminal stages of the disease. There is much to justify this position. Since pleural adhesions are the chief factor in the nonsuccess of the method, we should seek to apply the pneumothorax at a time when such adhesions are likely to be less frequent. They are found commonly enough in the routine postmortem examination of bodies that present otherwise normal lung findings. In cases of tuberculosis, in which the rich lymphatic network of the visceral pleura is so often the site of early extension, fibrinous and fibrous adhesions can be taken for granted in practically every case. The earlier the pneumothorax is attempted, the less likely it will be that adhesions will prove too extensive for favorable collapse therapy.

The end-results of treatment described by Beggs,[1] Minor,[2] Morris,[3] and Kendall and Alexander[4] seem to warrant definite confidence in the usefulness of the method in cases that are advancing despite the ordinary regimen of rest and diet, and perhaps also in early cases in which, because of unfavorable economic conditions, we cannot be assured that the patient will have the advantages (or at least the maximum benefit) that are possible under the usual hygienic and upbuilding methods.

It has been found in actual practice that the theoretical advantages of collapse therapy are fulfilled to a large degree, even when we cannot be certain that we have attained a complete result. The relative bloodlessness and the stasis of the lymph currents of the collapsed lung are followed by a lessening of the toxemia because of the decrease in the absorption of toxic material; the chances for dissemination of the infection are diminished; the rest accelerates cicatrization. To be weighed against these advantages is the possibility of activating a dormant focus of the opposite lung on which the entire task of ventilation is imposed. In hemorrhage, occasionally in lung abscess, and in some cases of bronchiectasis, ordinary contraindications must frequently be disregarded in view of the mechanical benefits of immediate compression and the relief thereby gained.

Artificial pneumothorax is today a relatively safe procedure. With gas injected under aseptic precautions, controlled by the roentgen ray and the manometer, and given in the small amounts insisted on by every conscientious worker, few complications need be feared. At present the method is seldom used except by the specialist in the tuberculosis field. The vast majority of tuberculous patients, however, are treated not by specialists but by the general practitioner, and there is no valid reason why a safe remedial measure should be withheld from the patient, who not infrequently is seen at a time when the pleural conditions are still favorable for the successful use of the pneumothorax.

If soldiers can be kept on active duty with a pneumothorax that is refilled at definite intervals, as they have been in the French army, there is no reason why, in times of peace, we cannot keep many patients in active, normal life and gaining a livelihood at their usual occupation. Under such conditions we are more likely,

1. Beggs, W. N.: Induced Pneumothorax in Pulmonary Tuberculosis, Am. Rev. Tuberc. **1**: 509 (Nov.) 1917.
2. Minor, C. L.: Deductions from Four and One-Half Years' Use of Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis, Am. Rev. Tuberc. **1**: 522 (Nov.) 1917.
3. Morris, Everett: Induced Pneumothorax: Its Use in the Treatment of Pulmonary Tuberculosis, with Report of Two Hundred and Two Cases, Am. Rev. Tuberc. **2**: 485 (Oct.) 1918.
4. Kendall, W. B., and Alexander, C. C.: Clinical Report on One Hundred and Thirty-One Cases Treated by Artificial Pneumothorax, Am. Rev. Tuberc. **2**: 79 (April) 1918.

also, to keep the lung compressed for a longer period of time than if the patient is treated for a relatively short term at some institution and returns then to his former environment without further supervision. Keeping in mind the fact that collapse therapy is really rest therapy, Morris has well emphasized that it is much safer to keep a lung compressed too long than not long enough.

NEW LIGHT ON PULMONARY EDEMA FROM STUDY OF THE LETHAL WAR GASES

The lethal gases about which so much has been heard since they were first introduced into modern warfare in an extensive way are respiratory irritants. They produce a pulmonary edema, along with congestion and a series of symptoms that are either caused by the pulmonary condition or are concomitant with it. Obviously, the rational treatment of gas poisoning depends on a clear understanding of the factors that are concerned in these varied symptoms; and consequently much attention was devoted by the scientists of the allied governments during the war to unraveling the mysteries of the pathology of gas poisoning. In his Harvey Lecture, Underhill[1] has disclosed new facts of prominent interest elicited through the extensive investigations of the Chemical Warfare Service of the United States Army. According to these, in addition to pulmonary edema, "gassing has a definite influence on the respiration, heart beat, temperature, the concentration of the blood, the water content of the lungs and other tissues, the chlorid content of the blood and tissues with resulting changes in chlorid excretion by way of the kidneys, the number of the red and white cells of the blood, and the respiratory function of the blood, leading to dyspnea and partial asphyxia. Acidosis is present at times, and there is a distinct influence on protein metabolism."

Since little or none of the harmful gas is absorbed, as a rule, the detrimental influence, Underhill insists, must be explained by an interpretation of the effects induced in the respiratory tract. Novel and distinct are the changes in the concentration of the blood. Sooner or later the latter is increased along with the development of the edema which induces the withdrawal of fluid from the circulating medium and its transfer to the lungs. The decrease in the blood volume helps to explain some features of the impaired circulation occasionally noted.

Heretofore it has been tacitly assumed that death from gas poisoning is due directly to the pulmonary edema. The experts of the Chemical Warfare Service have, however, taken exception to this view in some measure. Underhill[1] has performed a distinct service in calling attention to the blood concentration as more likely to produce death than is the presence of fluid in the lungs. Obviously, the edema is the cause of the blood concentration and therefore is ultimately responsible for the untoward consequences. However, the asphyxiating effects of the fluid in the lungs can be overcome by the administration of oxygen until the blood is arterialized, yet death intervenes as usual. On the other hand, it has been shown that when the blood is restored to a more normal concentration by infusion of physiologic sodium chlorid solution, the gassed individual may survive even though an extensive edema exists.

The fact that the control of the concentration of the blood, so that it becomes restored to something approaching its normal condition, plays a determining part in the chances for recovery, in cases in which pulmonary edema exists, deserves a wider recognition. It is one of the lessons of war-time scientific medical research. Administration of oxygen may supplement the value of the infusion of physiologic sodium chlorid solution by preventing anoxemia. Underhill has pointed out that oxygen treatment alone does not strike at the fundamental difficulty as it was once supposed to do. Oxygen starvation is induced by an inadequate circulation for which concentrated blood may be responsible quite as well as poor ventilation through an edematous lung. Hence, in such conditions, measures must be taken to restore the blood to a concentration at which life is possible.

Sometimes blood dilution occurs in the first stage of poisoning with gases, as happens with phosgen. In these cases, venesection is indicated. The composition of the blood must never be lost sight of, since it seems to furnish the key to successful remedial therapy in which infusion and oxygen administration may have a significant part.

1. Underhill, F. P.: The Physiology and Experimental Treatment of Poisoning with the Lethal War Gases, Arch. Int. Med. **23**: 753 (June) 1915.

BENZYL BENZOATE: THE STORY OF A PROMISING RESEARCH IN THERAPY

So many of the procedures still employed in present-day therapy are veiled in the mysteries of traditional effects or empiric judgments that there is fascination in the story of any drug or remedial measure that has a logical demonstration of pharmacologic potency in its history. Although the benzyl esters have been known only a short time in medicine, the possibilities of their usefulness in a rational way in certain fields of practice is becoming apparent. Benzyl benzoate has already been accepted for publication in New and Nonofficial Remedies, of the Council on Pharmacy and Chemistry. The suggestion of the applicability of the benzyl esters in therapy arose from Macht's studies of the opium alkaloids. These investigations disclosed the fact that whereas opium and its alkaloids exert their most marked effects on the central nervous system, they also have unmistakable influence on peripheral structures, notably the smooth muscle organs.

A systematic examination of the individual opium alkaloids—the logical sequence of the observations just mentioned—demonstrated that these chemical substances can be divided into two classes: the pyridin-phenanthrene group, of which morphin is the prominent representative, and the benzyl-isoquinolin group, to which papaverin belongs. The former was found to stimulate contractions of unstriped muscle, whereas the papaverin-like alkaloids inhibit the contractions and lower the muscle forms.

Macht and his co-workers did not stop with the proof of these differentiating effects. The difference in chemical structure between the two antagonistic types of opium alkaloids suggested the search for simpler, non-narcotic compounds which might still act in an inhibitory manner on smooth musculature. As a result, the discovery that benzyl benzoate and benzyl acetate behave like papaverin toward the unstriped muscles was made.

The low toxicity of these drugs, combined with their peculiar pharmacologic action, suggested the possibility of usefulness in conditions under which spasm of smooth muscle must be counteracted. Ureteral colic and excessive intestinal peristalsis have already been shown to yield to the tonus-lowering, antispasmodic effects of both compounds. Something of the history of the studies in this field has been recorded in a recent number of THE JOURNAL.[1] In this research, the laboratory and the clinic have combined to institute a step in therapeutic progress that promises beneficent results.

Current Comment

SOME ASPECTS OF THE HYPOPHYSIS AND SUGAR METABOLISM

An abundance of experimental and clinical evidence tends to indicate that the pituitary structures may in some way be concerned with carbohydrate metabolism in the body. One may recall the asserted increased tolerance for carbohydrates in well marked cases of acromegaly and in persons suffering from pituitary tumors. On the other hand, stimulation of the hypophysis in animals causes an unmistakable hyperglycemia. What happens in these varied circumstances remains to be elucidated. Some investigators have postulated the liberation of a hormone from the hypophysis when it is stimulated; and this hypothetic chemical product has been held responsible for the metabolic effects in respect to sugar utilization, just as pituitary extracts are known to have effects on muscular structures. Others have regarded the changes in the level of blood sugar after pituitary involvement as the expression of nervous impulses. As one investigator has expressed it: "It appears that excitation of the hypophysis has originated a stimulus which is directed peripheralward by nervous connections and falls on the splanchnic-adrenal-hepatic mechanism controlling the ultimate partition of glycogen." Keeton and Becht[1] of Chicago have noted that hyperglycemia commonly associated with pituitary stimulation is absent after transsection of the spinal cord and after section of the splanchnics. Hence the view is favored that, in this case at least, the pathway of relation between hypophysis and carbohydrate mechanism is a nervous one through the splanchnic nerves to their terminations in the suprarenals and the liver. If a hormone is liberated by stimulation of the gland, they add, it must have a central action; otherwise nerve section would not prevent it from reaching the sugar-transforming organs. The Chicago investigators also believe that the physiologic rôle played by the hypophysis in carbohydrate metabolism is concerned, not with the transformation of glycogen to sugar, that is, glycogenolysis, but more probably with the utilization of sugar by the organism.

THE RELATION OF INSECTS TO DISEASE

Demonstration of the share of certain insects in the causation of disease constitutes one of the most brilliant chapters in the unparalleled record of medical progress made since 1870. Conjecture has given way to assurance, supposition to verified fact. Most investigators probably believe that the greatest triumphs in this field have already been accomplished, and that the future hardly holds in store for us very many, if any, more such momentous discoveries as the connection between the mosquito and malaria and yellow fever, the flea and the plague, the louse and typhus. It is perhaps well to bear in mind, however, as W. D. Pierce has recently reminded us,[2] that there are still numerous minor problems to be worked out and that cooperation and organization are especially desirable in this field. Although somewhat formidable in manner and matter, the sequence of "necessary steps" in Pierce's program contains an interesting statement of the point of view of certain entomologists. The emphasis laid on proper methods of handling experimental insects is certainly desirable. His remarks on the importance of cooperation by specialists in different fields will doubtless receive hearty approval. Some of his other suggestions seem rather cumbrous and inapplicable in the present state of our knowledge: such, for instance, as the proposal that "one might in time of an epidemic start with insects visiting excreta and attempt to ascertain whether the organism of the disease at that time epidemic occurs in any of the insects." Few investigators will maintain that the most important advances in our knowledge of insect-borne diseases have been due to procedures of this character. It is hard to believe that the author has given serious consideration to his statement that "the majority of the investigations which have been seriously undertaken to determine invertebrate carriers have been conducted on other continents than ours." We need only remind ourselves of the

1. Macht, D. I.: A Therapeutic Study, Pharmacologic and Clinical, of Benzyl Benzoate, J. A. M. A. **73**: 599 (Aug. 23) 1919. Litzenberg, J. C.: The Use of Benzyl Benzoate in Dysemnorrhea, ibid., p. 601.

1. Keeton, R. W., and Becht, F. C.: The Relation of Hypophysis to Glycogenolysis, Am. J. Physiol. **49**: 248 (July 1) 1919.

2. Pierce, W. D.: Necessary Steps in Any Attempt to Prove Insect Transmission as Causation of Disease, Science, Aug. 8, 1919, p. 125.

pioneer work of Theobald Smith on Texas fever, the memorable discovery of the rôle of the mosquito in yellow fever, the work of Ricketts and others on typhus and Rocky Mountain spotted fever, and the recent work of the U. S. Public Health Service on malaria carriers, to see that such an assertion is hardly an adequate recognition of the part played by American men of science in this field.

DID YOU ORDER A HUNDRED-DOLLAR REBUILT FORD?

Physicians in the Middle West have received a circular letter from the "Anchor Manufacturing Company" of New York City, signed "per E. Maloney." The letter declares that the concern is going to sell, to a limited number of "professional men," a "fine lot of Ford automobiles" that it has purchased from the U. S. government. They are used machines, "all 1917 or 1918 models," but have been thoroughly overhauled "by expert mechanics who have had their training in one of the Ford plants." The price asked is $100, freight prepaid! Fifty dollars must be sent with order ("Liberty Bonds accepted at full face value") and the balance is to be paid after the car is delivered. All worn and defective parts of these cars have been replaced, the upholstering has been renewed, the car repainted, and refinished from top to bottom, fully equipped with new antiskid tires, new inner tubes, side curtains, tools and—an artistic touch—the purchaser would also get, without extra charge, a "manual on care of car with full instructions on driving." To lend an air of verisimilitude to what might otherwise seem to be a bald and unconvincing tale, Mr. Maloney stated that his company was, as an advertising proposition, "going to place twenty cars in that number of communities to which we can refer prospective customers." Their reason for picking out—or should we say "picking on"—doctors was that a "professional man knows and is known by more persons in his locality than any other citizen." The Anchor Manufacturing Company's stationery was somewhat imposing, being, in fact, a rather skilful imitation lithographed letter-head. The company gave as a reference the Chatham and Phenix National Bank of the City of New York, but insisted that all remittances be made payable to the Anchor Manufacturing Company. An Iowa physician, however, was wise; he decided to test out the proposition and sent his check for $50 to the Chatham and Phenix National Bank, telling that institution to forward his letter, money and order to the concern if the company was responsible. In a short time the doctor got his check back with a statement by the Chatham and Phenix National Bank to this effect:

"The Anchor Manufacturing Company referred to us without permission and we have nothing on file to justify an opinion."

After receiving letters from several physicians, indicating that the scheme was being extensively worked, The Journal telegraphed its New York representative to look into the matter. He reports that, according to the renting office of the building in which the "Anchor Manufacturing Company" had desk room, Mr. Maloney had left somewhat hurriedly four days previously, just about an hour ahead of a call from the New York Police Department. Further, it seems that numerous telegrams and long distance messages have been coming in recently to the renting office of 51 East Forty-Second Street, inquiring about the standing of the Anchor Manufacturing Company, all of which may indicate that a number of doctors are "out" a fifty dollar Liberty Bond or a check for that amount. To the shrewd business man the proposition made by the "Anchor Manufacturing Company" is preposterous on its face—but we members of the medical profession are not shrewd business men. Never has there been a time in which the get-rich-quick promoters have been more active than today. It behooves physicians to examine with more than ordinary care the proposals whereby they are offered returns out of all proportion to the investment required.

Medical Mobilization and the War

Personnel of the Medical Department

For the week ending August 29, there were 7,535 officers in the Medical Corps, a decrease of 631 from the previous week. The Medical Reserve Corps contained 3,310. The total number of physicians discharged since the beginning of the war is 24,580.

Bulletin for Air Medical Service

Authority to publish a *Bulletin of the Air Medical Service* is asked of Congress by the Secretary of War in a recent executive communication. In requesting this authority the Secretary said: "The Director of the Air Service states that as a result of the studies and experiments made by the medical officers on duty with the Air Service, especially those at the Medical Research Laboratory, much valuable information is now ready for publication. It is necessary that medical officers attached to the air service be kept in constant touch with developments in this new and important phase of aviation. Developments are so rapid and so much information is coming in that it is not considered in the best interest of the service to embody such information in a book, as such a book would require frequent revision." The publication would be published quarterly.

Investigation of Walter Reed Hospital Asked

A resolution directing the immediate investigation of Walter Reed Hospital and St. Elizabeth's Hospital, both at Washington, D. C., operated under the Medical Department of the Army, has been introduced by Congressman Charles J. Thompson of Ohio, in the House of Representatives. The resolution recites that complaints as to the conduct of these hospitals and of great cruelty therein have been made by those confined therein. The resolution has been referred to Select Committee on Expenditures of the House for consideration.

HONORABLE DISCHARGES, MEDICAL CORPS, U. S. ARMY

Note.—In the following list, L. signifies lieutenant; C., captain; M., major; L. C., lieutenant-colonel, and C., colonel.

ALABAMA

Bessemer—Ragsdale, V. H. (C.)
Birmingham — Thornton, W. L. (C.)
Childersburg—Sherer, M. E. (C.)
East Tallassee—Coker, R. H. (C.)
Lineville—Barfield, J. M. (C.)
Mobile—Padgett, W. A. (M.)
Opelika—Jenkins, J. F. (C.)
Pratt City—Heath, M. J. (L.)
Springville—Bradford, D. C. (C.)
Tuscaloosa — Somerville, J. H. (M.)

ARIZONA

Bisbee—Herendeen, R. E. (C.)

ARKANSAS

Gould—Clark, J. M. (C.)
Huttig—Jarrell, F. (L.)
Little Rock—Sheets, R. P. (C.)
Widener—Winter, W. A. (C.)

CALIFORNIA

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Culver City—Jones, R. M. (C.)
Los Angeles — Freedman, C. E. (M.)
Hull, F. M. (C.)
Irwin, J. C. (C.)
Lowman, C. L. (C.)
McLaughlin, J. H. (C.)

San Francisco — Cadwallader, R. (M.)
Nolan, T. J. (L.)
Tracy—Pinniger, S. E. D. (M.)

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Denver—Lewis, W. B. (C.)
Orsborn, G. E. (M.)
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Yergason, R. M. (C.)
New Haven—Logie, A. J. (C.)
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Noroton Heights — Hoyt, H. E. (C.)
South Manchester—Allen, E. B. (C.)
Winsted—Kelsey, E. R. (C.)

DELAWARE

Wilmington—Jenkin, B. A. (C.)

FLORIDA

Clermont—Chiles, J. H. (C.)
Daytona—Howe, R. (M.)
Gainesville—Buck, W. J. (L. C.)
Jacksonville — Richardson, S. A. (M.)
Milton—Johnston, Z. V. (C.)
Trilby—Byrd, H. O. (C.)

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Augusta—Parkerson, I. J. (L.)
Box Springs—White, A. W. (L.)
Bullochville — McDonald, R. H. (C.)
Calhoun—Starr, T. (L.)
Rome—Mull, J. H. (L.)

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Chicago—Axelson, J. M. (C.)
Brodsky, L. L. (C.)
Davis, N. S., 3d (C.)
Hogan, T. A. (C.)
Jordan, G. T. (C.)
Latimer, M. J. (L.)
Schlageter, E. A. (C.)
Solomon, M. (L.)
Turgasen, F. E. (C.)
Walker, G. R. (L.)
Evanston—Diamond, P. T. (L.)
Jacksonville—Smith, B. (L.)
Speer—Wilmot, C. M. (C.)
Tower Hill—Martin, F. A. (M.)
Wenona—Gillespie, E. S. (C.)

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Indianapolis—Orders, C. E. (C.)
Smith, R. L. (L.)
Stern, N. (L.)
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Whiting—Dewey, E. L. (C.)

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East Peru—Craven, L. L. (C.)
Fort Madison—Sallander, F. W. (C.)
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Biddeford—Dolloff, D. E. (C.)
Lincoln—Goodwin, H. M. (C.)
Norway—Allen, H. M. (C.)

MARYLAND

Baltimore—Branch, J. R. B. (C.)
Huck, J. G. (L.)
Novak, E. (L.)
Raskin, M. (L.)
Faston—Travers, P. L. (C.)
Federalsburg—Brooks, F. T. (L.)
Mardela Springs—Mann, H. R. (L.)
Owing Mills—Reitzel, E. C. (L.)
Towsen—Bridges, W. A. (L.)

MASSACHUSETTS

Boston—Bishop, F. L. (C.)
Dole, K. L. (C.)
Drury, D. W. (M.)
Ely, T. W. (L.)
Keenan, G. F. (Col.)
Lord, R. M. (L.)
Stevens, F. A. (L.)
Brookline—Surls, J. K. (C.)
Cambridge—Jouett, F. R. (M.)
East Longmeadow—Curtis, H. F. (L.)
Fall River—LaLiberte, E. J. (L.)
Lawrence—Hilton, J. J. (L.)
Lowell—Doucet, C. S. (C.)
Lovesey, B. E. (L.)
Ryan, W. F. (C.)
Newburyport—Snow, F. W. (L. C.)
North Attleboro — Ward, E. S. (M.)
Quincy—Harkins, W. J. (C.)
Somerville—Bell, R. D. (C.)
Springfield—Weiser, W. R. (L. C.)
Tewksbury—Coburn, H. R. (C.)
Waltham—Fraim, I. W. (C.)
West Quincy—Ash, R. M. (C.)
Worcester—Watt, G. (C.)

MICHIGAN

Calumet—Barton, J. F. (L.)
Coloma—Barnum, S. V. (C.)
Detroit—Gurney, S. C. (L. C.)
Grand Rapids—Toma, R. E. (C.)

MINNESOTA

Deer Creek—Roskilly, G. C. (L.)
Minneapolis—Noice, R. R. (C.)
Ward, P. A. (L.)
South Minneapolis — Shewbrooks, D. M. (M.)

MISSISSIPPI

Natchez—Chamberlain, C. T. (M.)

MISSOURI

Hawk Point — DeVereaux, J. J. (C.)
Jacksonville—January, C. C. (L.)
Kansas City—Hess, H. L. (C.)
Kirkwood—Wyer, H. G. (M.)
LaClede—Caldwell, J. C. (L.)
Sheldon—James, F. (L.)
Springfield—Box, E. M. (C.)
St. Louis—Burst, E. A. (L.)
Gregg, C. P. (L.)
Haas, F. F. (L.)
Lawrence, W. S. (M.)
Pim, L. T. (L. C.)
Wennerman, S. F. (L.)
Young, N. A. (C.)

MONTANA

Bynum—Dixon, E. F. (C.)

NEBRASKA

Hastings—Blackman, J. R. (C.)

NEW HAMPSHIRE

Concord—Hill, L. R. (C.)
Howard, A. B. (L.)
Lebanon—Hazen, H. B. (L.)

NEW JERSEY

Jersey City—Barishaw, S. (L.)
Millville—Sheppard, F. R. (M.)
Newark—Quinby, W. O. (M.)
Rich, C. (L.)
Plainfield—Corbusier, H. D. (M.)

NEW YORK

Alfred—Main, D. C. (C.)
Brooklyn—Embree, H. (L.)
Goodrich, C. H. (C.)
Greenwood, A. E. (L.)
Kemp, H. W. (L.)
L'Episcopo, J. B. (L.)
Phillips, W. G., Jr. (C.)
Buffalo—Barone, P. J. (L.)
Stein, U. B. (C.)
Clifton Springs—Earhart, S. D. (L.)
Flushing—Teas, J. C. (C.)
Long Island City—Jones, B. L. (L.)
New York—Altschul, A. (L.)
Benson, B. B. (C.)
Brooks, L. (L.)
Durham, H. A. (M.)
Effler, L. J. R. (C.)
Fisk, J. C. (C.)
Kahn, S. (L.)
Karmiohl, L. (C.)
Katz, H. (C.)
New York—Lynch, J. A. (L.)
Richards, J. S. (C.)
Rosenfeld, M. (L.)
Saunders, H. C. (C.)
Stern, M. E. (L.)
Walsh, E. F. (C.)
Wolff, S. C. (L.)
Saranac Lake — Packard, E. N., Jr. (M.)
Schenectady—Krida, A. (C.)
Syracuse—Wetherell, F. S. (L.)
Watertown — Pinsoneault, W. D. (C.)
West Coxsakie — Schoonmaker, J. I. (L.)

NORTH CAROLINA

Candler—Rich, J. C. (L.)
Canton—Davis, F. M. (C.)
Oxford—Hays, B. K. (C.)

NORTH DAKOTA

Oberon—Tompkins, C. R. (L.)
University—Cox, J. W. (C.)

OHIO

Akron—Ulrich, J. M. (C.)
Cincinnati—Matuska, A. (C.)
Cleveland—Hitchings, F. W. (C.)
Rosenberg, D. V. (L.)
Columbus—Huffer, E. (L.)
Lima—Pfeiffer, A. (M.)
McComb—Todd, C. D. (C.)
Swanton—Cosgrove, L. C. (C.)
Toledo—Figley, K. D. (C.)
Titus, F. C. (L.)
Wooster—Foster, T. (C.)

OKLAHOMA

Alderson—Foster, M. H. (L.)
Altus—Fox, R. H. (C.)
Bartlesville—Athey, J. V. (C.)
Minco—Hume, R. R. (C.)
Sand Springs—Calhoun, C. E. (L.)
Tulsa—Brodie, W. W. (C.)
Woodward—Davis, C. E. (C.)

OREGON

Portland—James, R. F. (L.)

PENNSYLVANIA

Allentown—Deibert, G. S. (C.)
Clarendon—Clancy, W. P. (C.)
East Brady—Kelsea, W. H. (L.)
Lancaster—Appel, T. B. (L. C.)
Olyphant—Bendick, J. J. (C.)
Philadelphia—Bailey, W. H. (M.)
Chambers, F. S. (L.)
Crampton, G. S. (L. C.)
Ludy, J. B. (M.)
Murphy, D. P. (L.)
Randall, E., Jr. (L.)
Stees, H. A. (L.)
Philadelphia—White, C. A. (C.)
Yount, C. C. (M.)
Pittsburgh—Kipp, H. A. (L.)
Stifel, J. L. (L.)
Weimer, E. S. (L.)
Warren—Pond, M. J. (C.)

RHODE ISLAND

Newport—Conway, F. P. (C.)
Pawtucket—Durkin, P. A. (L.)
Wickford—Manning, P. J. (C.)

SOUTH CAROLINA

Bishopville—Corbett, L. W. (L.)
Charleston—Price, W. H. (L.)
Wilson, L. A. (C.)
Florence—McMillan, L. M. (C.)
Greenville—Neves, C. A. (M.)
Honea Path—Abercrombie, E. (C.)
York—Hunter, P. W. (C.)

SOUTH DAKOTA

Webster—Fiksdal, M. J. (C.)

TENNESSEE

Block—Johnson, S. D. (C.)
Henning—Barfield, J. J. (L.)
Lenoir City—Hall, G. M. (L.)
Lucy—Bolton, L. T. (C.)
Memphis—Keller, L. L. (L.)
Williamsport — Anderson, H. O. (L.)

TEXAS

Beaumont—Pate, S. J. (L.)
Dallas—Carr, M. M. (C.)
Estelline—Clark, V. V. (M.)
Fort Worth—Boseman, J. D. (C.)
Galveston—Spiller, W. F. (C.)
Gonzales—Harrell, T. H. (L. C.)
Houston—Shaw, W. N. (L.)
Iago—Wyche, G. G. (L.)
Sanderson—Stansell, I. (C.)

UTAH

Salt Lake City—McHugh, F. M. (C.)

VIRGINIA

Forest Depot—Rice, B. A. (L.)
Norfolk—Driver, W. E. (M.)

WASHINGTON

Everett—Purdy, J. S. (C.)

WEST VIRGINIA

Huntington—Prichard, K. C. (C.)
Weston—Lawson, A. F. (C.)

WISCONSIN

Holcombe—Rodecker, R. C. (C.)
Montfort—Sylvester, H. (C.)

WYOMING

Sheridan—Hamilton, O. P. (C.)

MEDICAL OFFICERS, U. S. NAVY, RELIEVED FROM ACTIVE DUTY

CALIFORNIA

Los Angeles—Murrietta, A. J.
San Diego—Clark, V. G.

COLORADO

Hugo—Lieber, C.

DISTRICT OF COLUMBIA

Washington—Tibbets, A. P.

GEORGIA

Milledgeville—Roberts, M. H.

ILLINOIS

Clinton—Bradbury, W. E.
Winfield—Elsen, M.

IOWA

Blairstown—Rieke, A. G.

KANSAS

Topeka—Bresette, L. L.

LOUISIANA

New Orleans—Hebert, A. F.

MASSACHUSETTS

Boston—Cline, S.
Saphirstein, H.
Cambridge—Hanlon, M. P.
Worcester—Bridgwood, D.

MICHIGAN

Detroit—Tainter, R.

MINNESOTA

Litchfield—Robertson, C. J.

NEW JERSEY

Newark—Crecca, W. D.
Man, A. E.
Perth Amboy—Hanson, E. K.

NEW YORK

Indian Lake—Fish, G.
New York—Cauley, J. H.
Munkittrick, M. T.
Otisville—Rathbun, W. L.
Yonkers—McGillian, E. F. M.

NORTH CAROLINA

Mount Olive—Knowles, D. L.

OHIO

Albany—Webb, C. C.
Toledo—Berger, C. A.
Muenzer, J. A.

OREGON

Portland—Strong, H. L.

PENNSYLVANIA

Lititz—Yoder, M. H.
Philadelphia—Parish, B. D.
Stull, C. D.

RHODE ISLAND

Edgewood—Babington, V. E.

SOUTH CAROLINA

Charleston—Sparkman, E. H.

TEXAS

Poolville—Moose, R. M.

VIRGINIA

Richmond—Graham, C. F.
Roanoke—Justis, L. H.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

ALABAMA

Hospital News.—The Eliza Coffee Memorial Hospital, built by the citizens of Florence, was opened to receive patients, August 8. The institution will accommodate thirty-two patients, and will be in charge of Dr. Luther T. Young.——The New Tennessee Coal, Iron and Railway Company Hospital, Fairfield, is practically ready for occupancy. This hospital has been built for the employees of the company and their families, and has a capacity of 350. Dr. Lloyd Noland, Birmingham, chief surgeon of the company, is in charge of the institution.

Personal.—Lieut.-Col. Seale Harris, Birmingham, is at present ill in the Walter Reed Hospital, Washington, D. C., with phlebitis of one of the veins of the foot. He will probably return to Birmingham about October 1.——Dr. Cecil D. Gaston, municipal physician of Birmingham, has been appointed assistant surgeon in charge of the Norwood Infirmary.——Dr. William M. Faulk, Tuscaloosa, has been appointed assistant superintendent of the Alabama Insane Hospital.——Dr. George H. Searcy has been appointed local surgeon of the Alabama Great Southern Railway; Dr. Thomas H. Patton, assistant surgeon of the Louisville and Nashville Railway, and Dr. Maxwell Moody, local surgeon of the Mobile and Ohio Railway, all at Tuscaloosa.——Dr. T. Brannon Hubbard has resigned as physician in charge of the Social Disease Clinic of Montgomery, and has taken charge of the Highland Park Sanitarium; Dr. James R. Haigler, Montgomery, has been appointed his successor.

CALIFORNIA

Personal.—Dr. George W. Corner, III, Berkeley, has resigned as professor of medicine in the University of California, to accept an assistant professorship in his alma mater, Johns Hopkins University, Baltimore.——Dr. Harold W. Wright, San Francisco, has recently been demobilized from service after two years in the neuropsychiatric division.

New Appointments and Promotions at University.—The following appointments and promotions have recently been made at Stanford University Medical School for the year of 1918-1919.

Medicine: M. J. Desire, lecturer on physical therapy; G. E. Farrington, lecturer on speech defects; H. C. McClenahan, lecturer on medicine (neurology); Peter H. Luttrell, clinical instructor in medicine; Nathalie A. Selling, clinical instructor in medicine (electrotherapy).

Obstetrics and Gynecology: Frank B. Carpenter, lecturer on gynecology; William E. Stevens, lecturer on urology.

Surgery: Henry A. Brown, clinical instructor in surgery (ophthalmology); Roderic P. O'Connor, clinical instructor in surgery; Sterling Bunnell, lecturer on surgery; George W. Hartman, lecturer in genito-urinary surgery; Henry A. L. Hyfkogel, lecturer on surgery; Cullen F. Welty, lecturer on surgery (otology, rhinology, laryngology); Burt S. Stevens, lecturer on surgery; Alfred J. Zobel, lecturer on proctology.

Assistants—Medicine: Clement H. Arnold, assistant in medicine; John A. Duncan, assistant in medicine (dermatology); Norbert J. Gottbrath, assistant in medicine (neurology); Harry Spiro, assistant in medicine; Wiliam E. Smith, assistant in medicine.

Obstetrics and gynecology: Frank B. Galbraith, assistant in obstetrics and gynecology.

Surgery: H. W. Dudley, assistant in surgery (ophthalmology); Samuel N. Jacobs, assistant lecturer in surgery; Francis Raynes, assistant in surgery; Joseph D. Reeng, assistant in surgery (genito-urinary); John L. Campbell, clinic dentist.

Promotions: Walter W. Boardman, from assistant professor to associate professor of medicine (actinography); George D. Barnett, from instructor to assistant clinical professor of medicine; William R. P. Clark, from clinical instructor to assistant clinical professor of medicine (tuberculosis); Milicent M. A. Cosgrave, from clinical instructor to assistant clinical professor of medicine (pediatrics); M. Monica Donovan, from assistant to instructor in medicine (actinography); Ross W. Harbaugh, from assistant to clinical instructor in surgery; Maude N. Haven, from asistant to clinical instructor in medicine; Leo Eloesser from assistant clinical professor to associate clinical professor of surgery; Thomas G. Inman, from clinical instructor to assistant clinical professor of medicine (neurology); William Kenney, from assistant to clinical instructor in medicine (neurology); Lester O. Kimberlin, from assistant to clinical instructor in surgery; Harry L. Langnecker, from clinical instructor to assistant clinical professor of surgery (orthopedics); Mary C. Layman, from assistant to clinical instructor in medicine (pediatrics); Henry G. Mehrtens, from clinical instructor to assistant clinical professor of medicine (neurology); Philip H. Pierson, from assistant to clinical instructor in medicine (tuberculosis); Jay Marion Read, from assistant to clinical instructor in medicine; Alfred C. Reed, from clinical instructor to assistant clinical professor of medicine; Karl L. Schaupp, from assistant to clinical instructor in obstetrics and gynecology; Otis A. Sharpe, from assistant to clinical instructor in surgery (ophthalmology); Roland B. Tupper, from clinical instructor to assistant clinical professor of medicine; Jean R. Oliver, associate professor of pathology.

DISTRICT OF COLUMBIA

Commissioners of District to Have Increased Public Health Powers.—A bill to enlarge the powers of the commissioners of the District of Columbia relative to public health affairs has been introduced in the House by Congressman Carl E. Mapes, chairman of the House District Committee. The measure empowers the district commissioners to make and enforce such regulations as they may deem proper from time to time to prevent the spread of contagious, communicable and infectious diseases, which regulations may authorize compulsory reports and testimony in court by physicians and surgeons and by superintendents of public hospitals and managers of private hospitals and the examination of persons suffering from such diseases. Provision is made for proper publicity of new regulations. The measure is H. R. 8656 and has been referred to the Committee on the District of Columbia for action. It is indorsed by the commissioners of the district.

FLORIDA

Personal.—Lester J. Efird, Lieut.-Col., M. C., U. S. Army, Tampa, has returned after ten months of overseas service, during which he was in command of a base hospital at Nantes.

Board Adopts Retrenchment Policy.—The state board of health, at its meeting in Jacksonville, August 7, adopted a policy of retrenchment which it believes will enable it to accomplish the widest and most effective service. The staff of district health officers was cut in half, from eight to four, and the state was redistricted in accordance with the congressional districts. The board intends to concentrate much of its energies on venereal disease problems, and open free clinics at labor centers throughout the state. The child welfare and venereal disease headquarters will be moved from Tampa to Jacksonville, and the laboratory formerly conducted by the board in Tallahassee will be reopened.

ILLINOIS

The Misuse of Opium and Its Derivatives.—The health commissioner of Chicago states that physicians of the city in one month gave more than 103,000 prescriptions containing opium or its deritatives to be employed in the treatment of influenza.

Pharmaceutical Medal Awarded.—The Remington Medal, given annually to a member of the American Pharmaceutical Association who makes the most notable contribution toward the advancement of pharmacy, was awarded to Prof. James P. Beal, dean of the College of Pharmacy of the University of Illinois, Chicago, at the sixty-seventh annual meeting of the American Pharmaceutical Association held in New York City.

INDIANA

Diphtheria in Richmond.—Investigation of the local outbreak of diphtheria at Richmond was, it is reported, due to the eating of ice cream from a plant in which two employees had been suffering from some disease of the throat which is believed to have been diphtheria.

Personal.—Dr. Alexander Johnson, formerly head of the Feebleminded Institute of Indiana, at Fort Wayne, and for the last four years field worker for the National Society for the Prevention and Cure of Feeble-Minded, has been appointed superintendent of the Milne Home School for Girls, the industrial home for feebleminded women, New Orleans. The home was opened to receive inmates, August 18.——Dr. David P. Caldwell, Indianapolis, left, August 28, for Vancouver on his way to Batang, Thibet, where he will serve for seven years in the Thibetan Christian Mission.

MARYLAND

Personal.—Dr. Ralph Meyers has been appointed professor of pharmacology; Dr. Carl L. Davis, Washington, D. C., has been appointed professor of anatomy, in place of the late Dr. J. Holmes Smith, and Dr. William Carson von Glahn, Baltimore, has been appointed instructor of pathology at the Maryland University.——The following physicians, who have been in the service during the past two years, will resume their classes in October: Archibald C. Harrison, Cary B.

Gamble, Arthur M. Shipley, Page Edmunds, Hugh W. Brent, E. A. Cooper, Frank Martin, G. Milton Linthicum, Henry J. Walton and Andrew C. Gillis. Dr. Harry Friedenwald, Baltimore, has recently returned from the Holy Land and will also resume his classes.

Large Enrolment of Students at Medical Schools.—Responding to the nation-wide appeal for young men to take up the study of medicine, many have enrolled at both the Johns Hopkins University and the University of Maryland. Classes in medicine will be larger this year than usual, according to announcements from the two institutions. The study of medicine at these two schools was handicapped to a great extent the last two years owing to several instructors being in the service and to enlistments of students. The professors have returned and the majority of the students who entered the service before graduating will resume their studies. The University of Maryland School of Medicine will have an enrolment of 275, it has been announced by Dr. James M. H. Rowland, Baltimore, the dean.

MASSACHUSETTS

Hospital Notes.—The Julia M. Moseley ward of the Anna Jaques Hospital, Newburyport, which is to be devoted to the care of tuberculous patients, was opened to receive patients, August 22. The hospital was erected by Charles W. Moseley at a cost of about $40,000, and will accommodate sixteen patients.——The temporary structure to be operated by Brooks Cubicle Hospital, on the summit of Corey Hill, Brookline, will be ready for occupancy early this month.

MICHIGAN

Personal.—Dr. Harvey E. Hoffman, for several years city physician of Ludington, has resigned.

Society Reorganized.—The Dickinson-Iron County Medical Society was reorganized at the meeting held in Crystal Falls, August 13, and Dr. William J. Anderson, Iron Mountain, was elected president, and Dr. Leslie E. Bovik, Crystal Falls, secretary. The next meeting will be held in Iron Mountain.

Location of Detention Hospitals.—It has been decided by the supreme court of Michigan, that a board of health cannot locate and maintain a detention hospital for the treatment of communicable diseases in a thickly settled residential district. In this case in which the decision was sought, a suit was brought to restrain the maintenance of a detention hospital in a residential district, by the board of health of Lansing.

MINNESOTA

Public Health Nursing.—September 1, the university course in public health nursing was opened at the University of Minnesota, Minneapolis. The course is to be the usual four months of inspection and field work, followed up by another four months' course either in repetition or in continuation of the study.

Personal.—D. Frank W. Mackoy, Mudbaden, has resigned as medical director of the Mudbaden Sanitarium, Jordan, to return to his former position as a member of the staff of the Sacred Heart Sanitarium, Milwaukee.——Dr. Herbert O. Collins, Minneapolis, has been appointed superintendent of the State University of Iowa Hospital, Iowa City.——Dr. Carl J. Holman, Mankato, underwent an operation, August 4, in Rochester, for gallbladder disease.——Dr. Christopher Graham has severed his connection with the Mayo Clinic, Rochester, after twenty years of service, and has been succeeded by Dr. George B. Eusterman.

NEBRASKA

Medical Arts Building.—The plans for the new Medical Arts Building, Omaha, are practically completed and contracts are already being signed for floor space in the new building.

Personal.—Dr. James D. Case, superintendent of the State Hospital for the Insane, Lincoln, has, it is said, declined to turn over the superintendency of the institution to any one excepting the former incumbent, Dr. Lawrence B. Pilsbury, on his return from military service. Dr. Pilsbury, on his return, expects to enter private practice. The board of trustees has made the appointment of Dr. Case permanent. ——Dr. Benjamin F. Williams, Lincoln, has resigned as head of the state board of control.——Dr. Emma Robbins, Hastings, who has been a medical missionary in China for five years, sailed on her return to her post of duty from San Francisco, August 23.

NEW YORK

Personal.—Dr. Wallace J. Herriman, Rochester, who has been in the Naval Militia since April, 1917, has been promoted to medical inspector, M. C., with the rank of commander.——Dr. Anna M. Otto, Syracuse, started for Vancouver, August 21, and from there will sail for Ludhiana, India, as a medical missionary, September 4.——Dr. Morris Bellin, Albany, has been appointed coroner's physician of Albany County, succeeded Dr. Fred C. Myers, deceased.

New York City

Personal.—Henry P. Davidson, chairman of the War Council of the American Red Cross, has received from Secretary of War Baker, in behalf of President Wilson, the Distinguished Service Medal for meritorious and distinguished services in behalf of the government and the American Red Cross during the war.——Drs. Louis Aldrich Blake, Louisa Martindale and Marion Wright of England have arrived in this country to attend the world conference of women physicians to be held in this city beginning September 15.

New Plans for Care of Drug Addicts.—The project of using Sea View Hospital on Staten Island for the care and treatment of drug addicts has been abandoned because of the threatened injunction proceedings by civic organizations of Staten Island. The health department has now gone on with preparations for the use of Riverside Hospital on North Brother Island, which is under the control of the health department. In this institution 700 beds are now available for the use of drug users. Riverside has been vacated of all other patients and will be used exclusively for drug patients. Dr. Copeland states that $75,000 will be required for the operation and maintenance of this hospital to the end of the present year.

NORTH DAKOTA

New Examining Board.—The governor, August 4, named Dr. John G. Arneberg, Grand Forks; Samuel A. Zimmerman, Valley City, and William G. Brown, Fargo, members of the state board of medical examiners for terms of three years, succeeding Dr. George M. Williamson, Grand Forks; Gustavus J. McIntosh, Devils Lake, and Joseph G. Dillon, Fargo, whose terms have expired.

Personal.—The School of Medicine of the University of North Dakota announces the appointment of Dr. Benjamin J. Clawson, Chicago, as professor of pathology, and of Dr. Arthur D. Bush, as professor of physiology.——Dr. Arthur A. Whittimore, Bowman, has made a proposition that the cities of Bismarck, Jamestown, Valley City and Dickinson, unite in employing a whole-time health officer.

Venereal Disease in the State.—In the nine principal cities in North Dakota during the three months ending Aug. 30, 1919, 202 cases of venereal disease were reported, forty of which were in Minot and twenty-eight in Fargo. Full reports have not been received from the state clinics or from the physicians who are administering neo-arsphenamin on behalf of the bureau, but the records show that twenty-four doses of this drug have been administered. Of the 202 cases reported forty-six were of syphilis, 154 of gonorrhea and two of chancroid.

PENNSYLVANIA

Aims to Stop State's Gifts to Sixty-Six Hospitals.—Action in equity to restrain payment of state appropriations to sixty-six hospitals and homes of Pennsylvania on the ground that they are sectarian institutions has been brought into the Dauphin County court. The petition filed in the case contends that payment of appropriations is against the constitution, it being charged that "no appropriations, except for pensions or gratuities for military service, shall be made for charitable, educational or benevolent purposes to any person or community, or to any denominational or sectarian institution, corporation or association."

Philadelphia

Parents Asked to Aid in Health Campaign.—To protect children against the disease infection to which they will be exposed through close contact with one another in the public schools, the state health department has launched a "better health" campaign. A number of helpful suggestions have been explained to the parents, and if these instructions are obeyed, parents will not only be doing the best thing for the interest of their own children, but they also will render a valuable service to the community in general.

Recreation Centers Aid Many to Health.—The city, in its thirty-five or more recreation centers and playgrounds, is spending thousands of dollars to keep not only young men, but also the public, generally fit to defy disease and the ailments that are likely to attack an undeveloped body. The recreation centers are fitted with gymnastic apparatus and have staffs of trained teachers. The grounds are equipped with tennis, handball, basketball and volleyball courts, baseball diamonds, football gridirons and for other games. There are individual lockers and hot and cold showers, and clean, sterilized towels are also supplied. For the children there are gamerooms, with many sorts of games, a reading room, and club meeting rooms.

TENNESSEE

Hospital Items.—Arrangements have been made with hospitals of Memphis to care for discharged soldiers who, owing to the crowded condition of the Marine Hospital, cannot be placed in that institution. The Baptist, General and St. Joseph's hospitals have volunteered their services in caring for white men, and negroes will be cared for at the Wilcox Hospital.——The new Fort Sanders Hospital will be completed by November 1. The hospital will accommodate sixty-five patients, and, when completed, will have cost about $125,000.

Personal.—In recognition of his efficient work in the treatment of influenza patients of Bemis, during the epidemic last year, Dr. Andrew E. Brown has been awarded a bonus of $1,000 by the Bemis Brothers.——Dr. Charles B. Crittenden, Nashville, head of the state bureau of rural sanitation has commenced work in Madison County, with headquarters at Jackson. The state and county have appropriated $10,500 for this work in Madison County, which has been made the administration center for west Tennessee.——Dr. William G. Saunders has been reappointed city physician of Jackson.

WISCONSIN

Personal.—Dr. Asahel W. James, Muscoda, has returned after more than a year of duty with the American Expeditionary Forces in France.——Dr. Louis M. Field has commenced his official duties as city health officer of Beloit, succeeding Dr. William L. Holt, resigned.

CANADA

Hospital News.—To perpetuate the memory of relatives lost in the great war and to meet the shortage of hospital accommodation in Montreal, a group of citizens have decided to associate themselves to build St. Mary's Memorial Hospital. Many Montreal families have expressed themselves as favoring the proposition and have promised to endow beds in memory of lost sons, husbands or fathers. The hospital is to be open to all classes in the community. An appeal for funds is to be made in October by the provisional committee.

Personal.—Dr. H. O. Collins of the Winnipeg General Hospital, Winnipeg, Manit., has been elected superintendent of the Iowa University Hospital, Iowa City, succeeding Dr. Willard T. Graham.——Dr. George W. Badgerow, C. M. G., London, England, is visiting in Toronto for a month.——Dr. William B. Hendry, Toronto, who returned with the University of Toronto Base Hospital a short time ago as O. C., has been appointed associate professor of gynecology in the medical department of the university.——Dr. P. Walter H. McKeown of the Kitchener Hospital at Brighton, England, has returned to Toronto.——Dr. Benjamin P. Watson has returned to Toronto after a visit to Belgium.

Public Health News.—Hon. Newton W. Rowell is in charge of the organization of the new federal ministry of public health at Ottawa. The first step in organization consists in the taking over of the various departments dealing with health matters, which have heretofore been scattered over different ministeries. Already the department of quarantine has been taken over from the agriculture minister and also immigration and the administration of foods act and the proprietary and patent medicine acts. Dr. Norbert J. Amyot, the deputy minister, is taking up with the provincial departments of health plans for the cooperation between the federal and the various provincial bodies, especially as to the combating of the venereal diseases. A definite announcement will shortly be issued of the policy of the federal department of health.——The province of Quebec, within recent years, has made good progress in public health matters. In pure water alone, Quebec probably leads all the provinces. Out 3.8 per cent., 52,879 people, of a population living in cities, towns and villages of over 500 in population (1,383,729) rely on wells or lake water for their water supply, while 86 per cent. of the users are supplied with water which has undergone treatment in either filtration plants or chlorination. This has eventuated in much decreased typhoid. The adoption of the system of public nurses in baby welfare work is being rapidly extended. The idea is to better establish between health authorities and people the personal contact which is incomparably more effective than any other means of promoting health education.

GENERAL

Hospital Association to Meet.—The American Hospital Association will hold its annual convention at Cincinnati, September 8 to 12.

Bequests and Donations.—The following bequests and donations have recently been announced:

Pennsylvania Hospital, Philadelphia; Church Home for Children, Philadelphia; Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases, and Philadelphia Children's Hospital, each $5,000, and Hospital of the Episcopal Church, Philadelphia, $2,000, by the will of Emily Pratt.

The Dowst Homestead, Waukegan, valued at $150,000, to be converted to the Jane Dowst Emergency Hospital, in memory of his mother, by the will of Mr. Dowst, Waukegan.

Tuberculosis Conference.—The Mississippi Valley Conference on Tuberculosis will meet in Des Moines, Iowa, September 22 to 24. This conference includes delegates from Ohio, Indiana, Illinois, Iowa, Nebraska, North Dakota, South Dakota, Minnesota, Wisconsin, Michigan and Missouri. Delegates are also expected from Kentucky, Kansas and other states. The Iowa Trudeau Society has already sent an urgent request to each county medical society to name three delegates to the conference. Chief in the themes to be discussed are occupational therapy for the tuberculous, the county survey clinic, the modern health crusade, follow-up care for discharged tuberculous soldiers, and the health officer's part in the tuberculosis movement.

Women Physicians' Conference.—Health, the psychologic aspects of the sex question, and legislative measures as they reflect the present status of sex morality, will be the three divisions of the program intensively to be studied by women physicians at the International Conference of Women Physicians, to open in New York, September 15, and to continue for six weeks. The hostesses for the conference are the social morality committee, the war work council, the national board of the Young Women's Christian Association. Among the women physicians from abroad who have accepted the invitations of the conference are: Betty Agerholm, Copenhagen; Joahanne Feilberg, Copenhagen; Phoebe M. Powell-Bigland, Liverpool; Mary Gordon, London; Alice Hartmann, Paris; Anna Moutet, Lyon; Yvonne Pouzin, Nantes; Ada Potter, Utrecht; Anna Borrine, Torino; Clelia Lollini, Rome; Dagny Bang, Christiania; Regina Stang, Christiania; Mrs. James C. Johnston, Edinburgh; Gerda Kjellberg-Romanus, Stockholm; Alma Sunquist, Stockholm; Marie Feyler, Lausanne; Frieda Ottiker, Berne; Minna Tobler-Christinger, Zurich; Nathalie Wintsch-Maleeff, Lausanne; Harriet Jane Parrell, Basel; Marguerite Giboulent, Paris, and Marie Louise Lawaese-Delhaye, Antwerp. Doctors from India, South America and Canada are also expected and three from China have accepted. During the war a staff of 145 women physicians was called together under the section on womens' work with the social hygiene division of the committee on training camp activities of the War Department and these physicians gave in eleven months and a half, 6,188 lectures to 963,043 women and girls. The demand for the work was so strong, that the social morality committee has continued its efforts so that in March, 121 lectures were given, in April, 597, and in May, 1,111. The chief topic first to be presented for discussion, will be "The Woman Physician and the Health of Women," second, "The Present Social Conditions and Their Effect on Health and Personality," and third, "The Presentation of the Practical Program for Meeting the Needs of Girls in the Light of a Better Understanding of Their Emotional Life."

FOREIGN

Death of Dr. Dominici.—The death of Professor Dominici is reported from Paris. Dr. Dominici was very well known for his work on lymphatics and hematosis. His methods of teaching attracted to his classes a large number of students.

Spanish Physicians in the Senate.—At the senatorial elections held recently in Spain the following physicians were elected to that body: Drs. Nicolás Rodríguez, Luis Ortega Morejón, Ricardo Royo Villanova, Rodolfo del Castillo Ruiz and Luis Fatás.

Venereal Diseases in the State Examination.—The Netherlands Society for Repression of Venereal Diseases recently petitioned the government to add the words "skin and venereal diseases" to the list of subjects in which students have to be examined for their degree. The society added that a specialist in venereal diseases should be on the examining board.

Deaths in the Profession Abroad.—Dr. **Magnus Gustav Retzius,** formerly professor of anatomy at the University of Stockholm, and author of numerous works on anatomy and biology, aged 77.——The *Nederlandsch Tijdschrift* reports the death of Dr. **F. Merkel,** professor of anatomy at the University of Göttingen, aged 74, and of Dr. **E. Gasser,** professor of anatomy at the University of Marburg, aged 72. It is an odd coincidence that these three eminent professors of anatomy, all in the seventies, are the only deaths mentioned in the current foreign exchange mail.

The Rotgans Prizes for Cancer Research.—These prizes are open only to research workers in the Netherlands or Netherlands colonies. They are to be awarded from the income of the sum presented to Professor Rotgans of Amsterdam by his friends and pupils on the twenty-fifth anniversary of his professorship. He turned the sum over to the Netherlands Cancer Institute, specifying that the income of this "Rotgans-Fonds" is to be applied in prizes for current research on cancer and allied diseases. The entire sum can be awarded as a prize for any one, irrespective of nationality, who is deemed by the committee in charge to have discovered a sovereign remedy for cancer.

Netherlands Institute for Research on Nutrition.—It is announced that plans for the Nederlandsch Institut voor Volksvoeding are well under way and funds have been secured by donations and state subsidies nearly sufficient for the purpose. It is proposed to found a laboratory along the same lines as the Nutrition Laboratory of the Carnegie Institution in Washington, D. C. Both scientific and practical work will be done, and bulletins published, with popular lectures, all striving to promote and improve food conditions and the dietaries of the Netherlands people. Prof. E. C. van Leersum is mainly responsible for the success of the institution, but it will be managed by a board of experts. Professor van Leersum, it is said, is soon to visit this country on a tour of investigation.

LATIN AMERICA

Portuguese Surgeon Visits Brazil.—Dr. Augusto Monjardino, one of the professors of the School of Medicine of Lisbon and one of the prominent gynecologists of Portugal, is now in Brazil making a tour of the hospitals there. He is accompanied by his brother, Dr. Jorge Monpardino, the well known surgeon.

Medical Congress in Chile.—During the month of September there will be held at Santiago de Chile the Second National Medical Congress. Among the subjects to be discussed appear the following: the law on accidents of labor; popularization of child welfare work; medical work in hospitals; vital statistics; alcoholism, and tuberculosis.

Typhus Fever in Mexico City.—The last report published by the Superior Board of Health of Mexico shows that during the month of April there were reported sixteen cases of typhus fever in Mexico City.——The total number of deaths reported during that month was 1,028, which is considerably below the average mortality of the last twenty-three years.

Typhoid Fever in Uruguay.—A recent report submitted to the National Board of Health by Drs. Justo F. González and Antonio S. Viana shows that typhoid fever has caused an average of 57.4 deaths during the last ten years in Montevideo. The authors recommend the general enforcement of antityphoid vaccination and the compulsory reporting of the disease. The plan submitted by them was approved by the board.

Deaths in the Profession.—Dr. **A. Rodriguez Ecay,** one of the older members of the profession at Havana, aged 70. He took a prominent part in the organization of the municipal public health service and in the various medical scientific meetings that have been held in Cuba, and was one of the founders of the Sociedad de Estudios Clinicos.——Dr. **Manuel S. Guerrero y Ramírez,** a leading physician of Manila, member of the Council of Hygiene of the Philippine government, vice president of the Colegio Médico-Farmacéutico and editor in chief of the *Revista Filipina de Medicina y Farmacia,* secretary of the National League for Child Welfare Work and an authority on beriberi in infants. He was born at Manila in 1877, and succumbed to cancer, aged 42. Besides numerous publications on beriberi and other medical topics, he published under the pseudonym of M. Tralla articles of general literary interest.——**R. García Gastañeta,** a recent graduate at Lima, who succumbed to bubonic plague contracted at the beside of a patient.——Dr. **Francisco Liongson** of Bacolor, Philippines, president of the board of health of the province and at one time governor; now senator from four provinces, aged 50. He obtained his degree from the University of Madrid in 1893.——Dr. **J. Antonio Villagrán** of Guatemala, a victim to his zeal in combating the epidemic of yellow fever in Guatemala during the last six months, aged 30. He was one of the founders of the society La Juventud Médica and editor of its monthly journal. The last issue contains his reports on the epidemic, with editorial comment to the effect that the data prove that Guatemala is not an endemic focus of yellow fever.

MEXICO LETTER

MEXICO CITY, Aug. 24, 1919.

Yellow Fever

To judge from the news, which is not very satisfying, that reaches us from Yucatan, it has not been possible thus far to control completely the epidemic that made its appearance, several weeks ago, in that peninsula.

Opium Investigation

The courts of justice are investigating the discovery of a large quantity of opium which has been found in the house in which a well-known chemist has his office. According to newspaper accounts, this opium was intended for non-medicinal purposes.

Dehydration of Mexican Bananas

Dr. Tomás Pellicer, the Mexican consul in Philadelphia, suggests in an official communication recently published in the newspapers that the farmers of the so-called *tierra caliente* (the hot belt) of Mexico, especially those in the state of Tabasco, should investigate immediately the methods of drying bananas in order to meet the present scarcity of shipping facilities and be able to continue sending to the United States the large quantities of bananas which are marketed there.

Scientific Contest

Dr. Philippe Gracieux, editor of the *Crónica Médica Mexicana,* has opened a scientific competitive contest under the patronage of the School of Medicine. There will be two prizes, one of 1,000 pesos ($500), donated by a French industrial corporation, to the physician or medical student, irrespective of nationality, but residing in this country, who shall submit the best article furthering in some way the knowledge of typhus fever. The second prize of 200 pesos ($100) is donated by the journal itself and will be granted to the medical student who submits the best thesis giving the result of his personal observations or investigations on some therapeutic subject. The judges of the contest will be selected by the dean of the School of Medicine.

Adjournment of the National Academy of Medicine

The National Academy of Medicine has adjourned until October, 1919. Its sessions, which were supposed to end in July, had to be extended in order to decide certain questions it had under consideration. Among these were establishment of the rules that shall govern the contest of the *Universal,* mentioned in a previous letter, in regard to the discovery of the typhus fever germ. The academy decided that the contest should be limited to those physicians licensed to practice in Mexico and that it should close Dec. 31, 1919. The first requirement seems rather rigid since similar contests on the same subject have been open to all investigators, irrespective of nationality, and have not even required the contestants to be physicians, the decision being based only on the merit of the work.

The academy has begun again the publication of its journal, *La Gaceta Médica,* and the first number does credit to this society. The *Gaceta* is managed by Dr. Everardo Landa whose address is Apartado postal No. 517.

Dr. Brioso Vasconcelos has been made a member of the academy to fill a vacancy in the section of dermatology and syphilography, his thesis on the modern treatment of neurosyphilis having been accepted.

Personals

Among the well known men whose deaths are reported are Dr. Ignacio Capetillo, a former professor of clinical

obstetrics in the School of Medicine, aged 74 years, and Prof. Adolfo Castañares, director of the School of Chemistry and Pharmacology, aged 39 years.——Dr. A. Cornillon, a prominent member of the French colony who had been in Europe since the beginning of the war, giving his services to France, has returned to this country.——Charges of having violated the constitution have been preferred in congress against Alfonso Cabrera, governor of the state of Puebla. One of the charges concerns the closing of the state college of Puebla apparently because it had become a center of political opposition to the local government.

PARIS LETTER

Paris, Aug. 7, 1919.

Industrial Service That Mutilated Man Can Render

At a recent meeting of the Academy of Medicine, Drs. Gourdon and Dijonneau endeavored to determine the exact industrial value of mutilated men employed as workmen in a workshop or factory. They reported their conclusions with regard to the exercise of the trade of *ajusteur* (assembler, finisher or fitter), which is one of the most popular on account of the high salaries paid. In order to establish a definite basis for their investigations, Gourdon and Dijonneau set about to ascertain what the conditions were under which a fitter worked in a shop or factory. They studied his standing position, the movements of the upper limbs, what efforts were required in the management of the different tools, and what degree of endurance was required by an ordinary day's work.

Men who have lost only one lower limb, who have suffered the shortening of a limb or paralysis of one of the terminal branches of the sciatic nerve, if they are provided with prosthetic appliances, are adapted for the various kinds of work of a fitter. Those who have lost a forearm or a hand, and those who have suffered, unilaterally, pseudarthrosis of one of the bones of the forearm or ankylosis of the elbow at an obtuse angle, can perform only part of the work of a fitter, since they are able to use only a file, a hammer, carving tools and a scraper.

All other mutilations of an upper limb constitute a contraindication as regards the work of a fitter of any kind, even though requiring the use of very few tools.

The International Council for Scientific Research

At the last two meetings held in London and in Paris by the international conference of the scientific academies of the Entente (The Journal, Dec. 28, 1918, p. 2167, and Jan. 11, 1919, p. 133), the matter was discussed and it was decided to form a permanent international council to be known as the Conseil international de recherches scientifiques.

The council's committee on organization has recently adopted the article of the constitution and by-laws which establishes Brussels as the seat of the council. Here all the scientific communications that are received will be deposited, and here all gifts and bequests will be kept, after such manner as conforms with the laws of Belgium.

The bibliographic section has proposed that the Conseil de recherches shall absorb the Institut international de bibliographie, and suggests that an Office international de brevets et de documentation technique shall be formed, with its seat at Brussels, to take the place of the German organization which existed before the war and which sought to keep the industries of the world under its control. Four sections of the conseil have already been organized: astronomy, geodesy, chemistry and bibliography. The sections of medicine and physics are in process of organization.

The Belgian Red Cross

The Red Cross of Belgium will soon have completed its reorganization. At the present time a provisional committee is at work, directed by Dr. Depage, the surgeon who, during the war, was the founder and the chief of the Océan hospital. New by-laws are to be drawn up and submitted for royal sanction. In accordance with the usual custom, they will be presented for approval to the international committee of the Red Cross in order that the latter, being fully acquainted with the matter, may accredit the new Belgian Red Cross to the other branches of the society, in case such a reaccrediting shall seem necessary.

Personal

At the meeting, July 29, the Academy of Medicine elected Dr. Desgrez, professor of biochemistry at the Paris School of Medicine, as an active member in the section of physics and chemistry as applied to medicine.

Death of Dr. Reynier

Dr. Paul-Antoine Reynier, who occupied a professorial chair in the Paris School of Medicine and was an honorary hospital surgeon, died recently from pneumonia at his home in Villegondin (department of Loir-et-Cher). He was an active member of the Academy of Medicine and had served in the section of anatomy and physiology since 1904.

MADRID LETTER

Madrid, July 28, 1919.

Present Condition of the Medical Profession in Spain

In Spain the social condition of physicians today is practically that which the medical professions of other countries enjoyed before the organization of associations which improved their status. Every one feels the need of union, every one understands that the present isolation is suicidal, but the mutual lack of confidence and petty jealousies prevent progress.

There are in Spain, a country of 20,000,000 inhabitants, ten schools of medicine and the number of students of medicine exceeds those enrolled in the other subjects (law, pharmacy, science and letters). The eagerness shown by young men to obtain the degree of M.D. is fostered by a curious idea which some medical schools and many professors have of their duties. The former, in order to increase the importance of the towns where they are located and the latter to become popular, pass almost all the pupils they examine. In this way the number of physicians has increased to such a degree that there has been formed what we may call a medical proletariat. All cities and villages are overcrowded with physicians and there are physicians in excess for every occasion when only one is needed. As the supply exceeds the demand by far, the medical service is degraded. As exposed by Dr. Angel Pulido, when he was president of the Medical Society of Madrid, some physicians in the capital of Spain charge 10 *céntimos de peseta* (about 2 cents) a visit or agree to treat patients at the monthly rate of 1 *peseta* (19 cents). I may add that there are over 2,000 physicians at Madrid, a city with 600,000 inhabitants.

The difficulties with which the physicians struggle have been aggravated by the appearance of the wrong kind of leaders who advise violent measures to conquer an evil which requires careful and wise attention. A few years ago the association of municipal physicians was created, but its management was so unfortunate that the government compelled the directors to give an account of the funds in their charge and return to the members over a million of *pesetas* (about $200,000) then available. The real trouble is that physicians—instead of helping themselves—want somebody else to help them out and place all their hopes in the government.

Payment of Municipal Physicians by the Government

Municipal physicians have always been unanimously in favor of payment by the government. Dr. Cortezo succeeded in having the government issue a decree that thereafter preference would be given by the municipalities to the payment of the salaries of municipal physicians and that the budgets of the city councils would not be approved unless the physicians' salaries were included. This implied a positive improvement since many councils owed to their physicians salaries amounting to several millions of *pesetas*. A number of the agitators were, however, not pleased and have continued their protests, although it is evident that the government cannot undertake the payment of the physicians' salaries at present.

A typical sign of the jealousies and rivalries that prevail in Spain came to light in the memorial presented at the recent medical congress by the School of Medicine of Cáceres which charged in substance that the physicians residing at Madrid did not know the meaning of the phrase "professional fellowship" in their relations with physicians of other towns and that the only standard applied in Spain to judge of a physician's ability was the size of the town in which he practiced.

Autonomy of the Universities

Closely related to the present unrest among the medical profession, the real source of which is the excessive number of physicians graduated from the universities, is the autonomy or self-government granted recently to the universities. These used to be self-governing, and they had in those days

a long and often brilliant history, since Salamanca, Alcalá de Henares and others which obtained worldwide reputation in past centuries, were all independent, self-governing universities. The abuse which they made of this power resulted in the taking away of their autonomy. After a time a number of professors asked that autonomy should be granted again to the universities as the only way to give new life to academic teaching and infuse new love for science. A secretary of public instruction, the second one of the three we have had this year, suddenly granted the autonomy desired by the universities and entrusted to them the preparation of their own by-laws and rules. We had then the curious spectacle of a number of professors publishing articles in which they expressed doubts as to the wisdom of the measure and the fear that it might be premature.

Medical Teaching in Spain

There is no question that the number of universities which have medical departments is by far too large, the majority not possessing adequate resources or facilities for demonstrations or experiments. The teaching is so theoretical that if a foreigner who did not know the language attended the courses, he would get as much benefit as if they were classes in theology. The course embraces nominally eight months (from October to May) and lasts seven years. An examination is required for each subject. This examination is held in June and if the student fails he can take it again in September. At the end of the medical course, there is a general examination which, if successful, will secure for the student the degree of Master of Medicine and permit him to practice his profession. The degree of doctor requires another year of study in Madrid, and the secretary of public instruction may or not at his discretion require the student to prepare a thesis to be judged by the medical staff.

The examinations used to be held before three professors, but recently this was changed and only one professor is now in charge of the examination. This was really the beginning of the increase in the number of students, since after the change the number of those failing to pass the examinations decreased considerably, and some professors boast that they have never had one of their pupils fail.

In Spanish universities there are two kinds of teaching: the official, in which the student attends the classes of the university professors and the optional or "free," in which the student studies wherever he pleases and presents himself in June or September for examination.

Apropos of the autonomy recently granted to the universities, Cajal has given out an interview regretting the constant changes in the department of public instruction, which with each new secretary result in corresponding educational changes. We have had in the last three years three general elections and not less than ten different cabinets. He suggests, therefore, that all secretaries should be kept in power at least six years, so that they may devote the first two years to comply with the demands of their relatives and friends; the next two they will study the work of their departments and finally in the last two years they will be able to achieve something.

Death of Dr. Tolosa Latour

Very suddenly, when he seemed in the prime of health and on the very day before the Royal Academy of Medicine was going to elect him a senator, there occurred the death of Dr. M. Tolosa Latour, one of the most prominent figures of Spanish medicine. Dr. Tolosa Latour was a distinguished writer who did much to popularize science, a worshipper of art and had a heart of gold. He had devoted his whole life to children, had become a famous specialist in pediatrics, and was instrumental in securing the passage of the law for child welfare. He founded and supported until his death the seashore sanatorium at Chipiona, the first one of its kind in Spain.

Death of Dr. Gómez Ocaña

In my previous letter, I referred to the address delivered by the chairman of the First National Congress of Medicine in Spain. In my present letter, I have to communicate the news of his death. Dr. J. Gómez Ocaña became professor of physiology at the School of Medicine of Madrid after holding the same place at Cádiz. His experimental studies on the thyroid gland made a name for him. He was an excellent teacher and his studies on Cervantes and his times attracted much attention. He was a member of the academy, a life senator and when he referred to himself at the closing of the medical congress said "I am not sure whether I have taught physiology to my students. I know, however, that I have taught them to be good men and to love Spain."

LIMA LETTER

LIMA, July 24, 1919.

Yellow Fever at Piura

Owing to the frequent intercourse between the department of Piura and the region surrounding Guayaquil, Ecuador, a mild epidemic of yellow fever has occurred in this northern province of Peru. A commission consisting of Major Henry Hanson of the U. S. Army Medical Corps, who is now on duty in this country, an engineer, and two assisting physicians, has been sent from Lima and has already begun its work. According to the available information there have been about thirty cases of yellow fever with a total of ten deaths. The port of Payta, the first one on the Peruvian coast, has also been affected by the epidemic and the necessary measures have been taken to prevent the spread of the disease and to make all ships comply with the provisions of the International Sanitary Convention of Washington.

Malaria in Lima

Malaria, which is endemic all along the Peruvian coast, has shown a very marked increase in the capital of the republic and in the adjoining valley. The mortality from this disease reached last year a total of 266 as compared with 112 reported the year before. Dr. Hanson had been engaged to eradicate this disease, but he had to be sent to control the yellow fever outbreak.

Commission on Rural Sanitation

The ravages of malaria have induced the society of civil engineers to create a commission on sanitation which, in cooperation with other agencies, will devote its efforts to the improvement of rural sanitation in this country. The commission has published for distribution an interesting pamphlet on this subject. Dr. C. E. Paz Soldán has been chosen president. One of its members is S. Gutiérrez, an engineer who now occupies a seat in the cabinet, being the head of the department of the interior and sanitation. It is to be hoped that this commission will meet with success.

Symposium on Influenza

The National Academy of Medicine of Lima has devoted two sessions to a discussion of various reports bearing on the pandemic of influenza in this city. According to the papers presented, the influenza here did not show any difference in its clinical, anatomic, pathologic and bacteriologic characteristics from those it presented in other parts of the world. It is worth noting, however, that in Lima the influenza did not cause such an excessive mortality as at other points. Dr. A. Corvetto, a member of the academy, presented an interesting paper showing with abundant evidence that tuberculosis was seldom influenced by influenza.

Progress in the Study of Odontology

As the result of the efforts of Dr. W. S. Salazar, the director of the dental school, a new dental clinic was opened at Lima last month which will be used for the teaching of odontology. The physicians in this city view with approval this new undertaking.

New Trustees for the National Academy of Medicine

The Academia Nacional de Medicina has appointed its new board of officers for the year 1919-1920 as follows: president, E. Pardo Figueroa; vice president, Dr. E. Odriozola; secretaries, Drs. C. E. Paz Soldán and A. Corvetto; treasurer, Dr. E. Bello; members, Drs. J. Denegri and W. S. Salazar.

Marriages

ALLEN CALLENDER SUTTON, Capt., M. C., U. S. Army, Baltimore, to Miss Clara A. Wagner, at Roland Park, Baltimore, August 16.

JOHN SEDGWICK DORSEY, Mount Rainier, Md., to Miss Margaret R. Neave of Dresden, Ohio, at Annapolis, Md., August 14.

SAMUEL HENRY KAGAN, Capt., R. A. M. C., Augusta, Me., and Boston, to Mrs. Violet Barnes of London, England, June 21.

BERNARD PIERRE WIDMANN to Miss Mary Eileen Maher, both of Philadelphia, August 27.

GEORGE JOSEPH HANCE, Troy, Ohio, to Miss Mary Johnson of Cincinnati, September 1.

LYNDON DENNY HARRIS to Miss Elsie Marie Gonnerman, both of Chicago, recently.

Deaths

Joseph Zeisler ✙ Chicago; died suddenly in the Grand Hotel, Mackinac Island, Mich., August 31, from angina pectoris; aged 60. Dr. Zeisler was born in Bielitz, Austrian Silesia; was graduated in medicine from the University of Vienna in 1882; and after serving as an intern in the Vienna General Hospital for two years, came to America and settled in Chicago in 1884. In 1888 he began his teaching career as professor of skin and venereal disease in the Post-Graduate Medical School; a year later he became professor of dermatology in the Northwestern University, Woman's Medical School, Chicago, and in the same year was made professor of skin and venereal diseases in the Northwestern University Medical School, holding the latter position as professor emeritus at the time of his death. He was chairman of the Section of Dermatology of the American Medical Association in 1912-1913, president of the Chicago Dermatological Association in 1904 and 1914, and president of the American Dermatological Association in 1903-1904; he was also chief dermatologist to Mercy, Wesley and Michael Reese hospitals, and to the South Side Free Dispensary. Dr. Zeisler in addition to his professional attainments was a man of charming personality, a musician of high ability, and took a great interest in arts and letters.

Lucien Guy Heneberger ✙ **Med. Dir. (Capt.), M. C., U. S. Navy (retired),** Washington, D. C., and Newport, R. I.; University of Virginia, Charlottesville, 1872; aged 67; who entered the Navy in 1874; was made surgeon in 1890 and medical director in 1908; was one of the officers of the *U S. S. Maine* when she was sunk in the harbor of Havana in 1898; physician at the White House during President Arthur's administration; and who was retired, Oct. 20, 1913, on attaining the age of 62 years; died in the U. S. Naval Hospital, Washington, August 3.

Edward Larnedo McGhee ✙ Hammond and New Orleans, La.; Tulane University, New Orleans, 1874; aged 67; once president of the Mississippi State Medical Association; professor of physiology, hygiene and pathology in the New Orleans College of Dentistry; president of the Louisiana Anti-Tuberculosis League; organizer and superintendent of the Hammond Sanatorium for the Treatment of Tuberculosis; died at his home in Hammond, August 13.

Jesse Williamson, Philadelphia; Jefferson Medical College, 1873; aged 66; a member of the Delaware State Medical Society; at one time a resident of Colorado Springs, Colo.; visiting physician to St. Francis' Hospital, Colorado Springs, and consulting surgeon to the Union Pacific and Denver and Rio Grande systems; died in Bay Head, N. Y., August 17, from angina pectoris.

John Alfred B. Adcock, Warrensburg, Mo.; Eclectic Medical Institute, Cincinnati, 1877; University Medical College, Kansas City, Mo., 1901; aged 68; a member of the Missouri State Medical Association; for many years a member of the state board of health; secretary of the board in 1905 under the administration of Governor Major; died at his home, August 20, from cerebral hemorrhage.

George S. Williams ✙ Muskegon, Mich.; Rush Medical College, 1883; aged 63; in 1912 president of the Muskegon-Oceana County Medical Society; a member of the staff of Hackley Hospital, Muskegon; division surgeon of the Grand Rapids and Indiana Railroad; died at his home, August 15, from uremia.

William J. Langfitt, Pittsburgh; Rush Medical College, 1867; aged 81; said to have been the oldest practitioner of Allegheny County; one of the organizers, secretary and director of St. John's General Hospital; for more than seventeen years a member of the Allegheny City school board; died at his home, August 27.

John Vilas Wright ✙ Dallas, Texas; University of Texas, Galveston, 1911; aged 33; a specialist in tuberculosis; and for seventeen months medical director of Woodlawn Tuberculosis Sanatorium, Dallas; died in that institution, April 28, following an operation for appendicitis.

William H. Hawkins, Greenville, Tenn.; Louisville (Ky.) Medical College, 1890; aged 58; a member of the Tennessee State Medical Association and a specialist in pediatrics; local surgeon for the Southern Railway system; died at his home, August 18, from cerebral hemorrhage.

John Maynard Emery, Des Moines, Iowa; University of Michigan, Ann Arbor, 1876; aged 62; vice president of the Reinsurance Life Company of America, and a well known consulting actuary; died in Helena, Mont., about August 20, from cerebral hemorrhage.

Charles von Schroeder, Maquoketa, Iowa; Rush Medical College, 1882; aged 60; who soon after his graduation entered the First National Bank of Maquoketa, of which he eventually became president; died at his home, August 18.

Nelson K. McCormick, Normal, Ill.; Northwestern University Medical School, Chicago, 1886; aged 57; president of the board of directors of Brokaw Hospital, Bloomington, Ill.; died in Petoskey, Mich., July 26, from nephritis.

David Mott Robertson, Spout Spring, Va.; New York University, New York City; formerly representative in the state legislature, and treasurer of Appomattox County; died at his home, August 17, from heart disease.

Harry Isaac Newcomet ✙ Reading, Pa.; University of Pennsylvania, Phildelphia, 1912; aged 32; who was honorably discharged as lieutenant, M. C., U. S. Army, Dec. 9, 1918; died at his home, about August 10.

Hiram Heaton Swallow, Topeka, Kan.; Starling Medical College, Columbus, Ohio, 1884; aged 63; for twenty years in charge of Merrill Springs Sanitarium, Carbondale, Kan.; died at his home, August 16.

Salathiel A. Hitchcock, Elida, Ohio; Cincinnati College of Medicine and Surgery, 1870; aged 76; a veteran of the Civil War; died at the Lima (Ohio) City Hospital, August 18, from intestinal obstruction.

Charles Toomer Parrish, Portsmouth, Va.; College of Physicians and Surgeons in the City of New York, 1890; aged 52; a member of the Medical Society of Virginia; died at his home, August 6.

George W. Morehouse, Delaware, Ohio; Columbus (Ohio) Medical College, 1886; aged 61; a member of the Ohio State Medical Association; died at his home, August 13, from cerebral hemorrhage.

William Bissell, Lakeville, Conn.; Yale University, New Haven, Conn., 1856; aged 89; a member of the Connecticut State Medical Society; died at his home, July 2, from cerebral hemorrhage.

Paul Hamilton Markley, Camden, N. J.; University of Pennsylvania, Philadelphia, 1882; aged 59; a member of the Medical Society of New Jersey; died at his home, August 28.

William Lee Dalby, Bridgetown, Va.; Medical College of Virginia, 1891; aged 49; a member of the Medical Society of Virginia; died at his home, August 14, from nephritis.

Theodore H. Patterson, Seattle; University of Wooster, Cleveland, 1865; surgeon of the 187th Ohio Volunteer Infantry during the Civil War; died in Seattle, about August 24.

George Walter Nevils ✙ Rowesville, S. C.; Medical College of the State of South Carolina, Charleston, 1890; aged 49; died in the Maryland University Hospital, August 5.

William Chatfield Burke, Wykoff, Minn.; St. Louis University, 1915; aged 30; was instantly killed, near Canton, Minn., August 17, by the overturning of his automobile.

Frederick J. Schouten, Holland, Mich. (license, years of practice, Michigan, 1900); aged 76; a practitioner and druggist for forty years; died at his home, August 20.

Frederick J. Lindenschmidt, Milwaukee; Northwestern University Medical School, Chicago, 1883; aged 59; died in his office, August 18, from cerebral hemorrhage.

Lemuel Edwin Willis ✙ Newport, Ark.; Missouri Medical College, St. Louis, 1886; aged 57; died in a sanatorium in St. Louis, August 16, from cerebral hemorrhage.

Fletcher Alberto Smith ✙ Corinth, N. Y.; Dartmouth Medical School, Hanover, N. H., 1888; aged 62; died at his home, June 27, from cirrhosis of the liver.

William Case Williams, Denver; Eclectic Medical Institute, Cincinnati, 1873; aged 71; died at his home, June 22, from cerebral hemorrhage.

Joseph Van Meter Champion ✙ Mansfield, Ill.; Rush Medical College, 1885; aged 62; died at his home, August 7, from valvular heart disease.

Lewis Clark Crowell, Syracuse, N. Y.; Cleveland University of Medicine and Surgery, 1872; aged 72; died at his home, August 2.

James E. Ryan, Redwood, N. Y.; Chicago Homeopathic Medical College, 1886; aged 59; died at his home, July 7.

Samuel L. Rea, Oxford, Pa.; University of Pennsylvania, Philadelphia, 1871; aged 76; died at his home, August 17.

✙ Indicates "Fellow" of the American Medical Association.

Correspondence

"PROTEOGENS"

To the Editor:—Allow us to direct your attention to several misstatements which appear in the letter signed "Allen W. Freeman, M.D., Commissioner of Health, State of Ohio," published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for July 26.

1. Salesmen of this company have *not* been exhibiting a "letter purporting to show that this department has endorsed their products in the treatment of venereal diseases," as stated by Dr. Freeman.

2. The author of the letter has *not* "made numerous efforts to recall the letter, but the Merrell people profess an inability to control its use," as stated by Dr. Freeman.

A physician employed in one of the clinics used our Proteogens Nos. 10 and 11 extensively and is still using them to a large extent in his private practice. He is a man of standing in the community in which he practices and is also a professor in one of the leading medical colleges in the state.

The letter in question cites the case of a man who had been under treatment for three years with 606, 914 and most of the other treatments in general use, and on August 31, a year ago, still gave a Wassermann test plus 4. He was given Proteogen No. 10, and by the middle of December the Wassermann was negative and the man was discharged as cured.

While this letter was written on the stationery of the Bureau of Venereal Diseases of the Department of Health, State of Ohio, it was written in the first person, and made no pretension in any way to being official nor was any such pretense made or authorized by the Merrell Company.

The author of the letter has *not* made "numerous efforts to recall the letter," nor has the Merrell Company "professed an inability to control its use."

The physician did ask that the letter be returned to him, and his request was complied with promptly.

[Then follows the full text of the letter in question. As its contents have no bearing on the question under discussion, it is omitted.—ED.]

In over ninety-one years of honorable service as manufacturers of medicinal preparations, the Wm. S. Merrell Company has never endeavored to advance its interests through misrepresentation.

THE WM. S. MERRELL COMPANY,
CHAS. G. MERRELL, Pres.

[The letter above was submitted to Dr. Allen W. Freeman, Commissioner of Health of the State of Ohio. Dr. Freeman's comments appear below.—ED.]

To the Editor:—The plain issue of veracity raised in the communication of the Merrell Company must be settled on the evidence, which is unfortunately too voluminous to be published in full in THE JOURNAL. Copies of the correspondence in the case have been furnished the editor, and the originals are on file in the office of the state department of health in Columbus.

1. Whether or not the photographic reproduction of a letter written on the letter head of this department, and the distribution of copies to salesmen for display to physicians, was a conscious effort on the part of the firm in question to create the impression that the letter was an official one is perhaps a matter of inference. That it did create such an impression is evidenced by the letters of inquiry received from physicians who saw it.

2. The statement that the Merrell Company refused to return the *letter* is perhaps erroneous. They did apparently return the original letter but not the *photographic copies* which had been distributed to their salesmen. On May 22 the firm wrote as follows:

"A number of physicians who are in cooperation with both state and national bureaus of venereal diseases have been using our Proteogens with marked success and there are doubtless many letters carried by our salesmen—reports from some of these physicians."

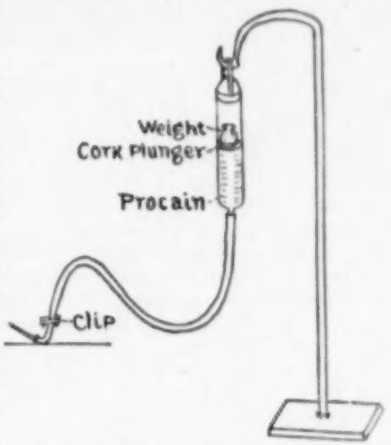
This was interpreted to mean that the firm had no method of knowing what letters were carried by their salesmen and was not responsible for them. Whether or not this interpretation is correct is again, perhaps, a matter of opinion.

The purpose of the original communication was to make plain to those of the profession who have already seen or might subsequently see the letter referred to that the communication was the expression of an individual and not of the Department.

A. W. FREEMAN, Commissioner.

"ABDOMINAL SURGERY UNDER LOCAL ANESTHESIA"

To the Editor:—I was very much interested in the article of Dr. Robert Emmett Farr on "Abdominal Surgery under Local Anesthesia" (THE JOURNAL, Aug. 9, 1919, p. 391). I have no criticisms to make of the surgical aspects of the article, but beg leave to criticize the mechanical end. Why is it necessary to have the complicated mechanical devices portrayed in the photographs when the same results can be obtained by the simple hydraulic pump here portrayed? The only really necessary equipment is an arsphenamin apparatus, a cork plunger, and some sort of weight above this, either a one or two pound metal weight, or a small bottle, say an ounce bottle filled with mercury or with lead shot. What could be simpler, or what could be more beautifully efficient?



Injector for use in local anesthesia.

LUCIUS F. HERZ, M.D., New York.

GERMANY AND IMMUNOLOGY

To the Editor:—A current article by Colonel Vedder on the Wassermann reaction in the *Journal of Immunology* (4:141 [May] 1919) fires a train of thought already laid. Colonel Vedder suggests that the term "Wassermann reaction" be abandoned in favor of "Bordet-Gengou reaction." Partisan as I am of the Belgian school, I regret that I cannot see the force of the argument assigned by Colonel Vedder. He states correctly that, whereas Wassermann's original idea was that his reaction in syphilis was to be regarded as a reaction between a specific antigen (extract of fetal syphilitic liver) and its corresponding antibody, it has since been realized to be nonspecific in respect to the antigen employed. As the reaction of Bordet and Gengou is strictly specific in both respects, Wassermann would seem entitled to credit for developing a novel type of nonspecific fixation reaction of great practical utility.

There are, however, substantial evidences of German usurpation in immunology which it would now be well to destroy not simply for emotional reasons, or reasons of honesty, but in the interest of scientific truth. The entire Ehrlich hypothesis, with its misleading nomenclature, has long been an inhibition to independent scientific thought. With the exception of the earlier work in toxin and antitoxin, the only heuristic value of Ehrlich's theory has been in stimulating Bordet to further fundamental discoveries. Since there are few workers who now believe in more than fragments of the Ehrlich hypothesis, it would seem an advisable moment to abandon most of the Ehrlich terminology. There are, for example, few writers in this field who have had any convictions about the use of the words "alexin" and "sensitizer" in preference to the German terms "complement" and "amboceptor," which seem inextricably fastened on our

scientific literature. Although the word "complement" is not in itself particularly committing, it is less completely explanatory of what we believe to be the ferment-like activity of the substance normally present in fresh serum on which the ultimate destruction of bacteria depends. On the ground of priority and accuracy, the term "alexin," originated by Buchner and functionally defined by Bordet, should take precedence over Ehrlich's "complement." The word "amboceptor" cannot be defended except by the blind adherents of Ehrlich's fantastic theory. Its adoption into common parlance is due undoubtedly to the fact that most workers who apply this term have been engaged in a purely practical application of the facts of immunology rather than possessed of first-hand information on the mechanism of the reactions themselves. A careful inspection of the literature should convince one that the immune substance in serum has never been demonstrated to be capable of combining with the alexin without previous union with the antigen as implied in the term "amboceptor" (compare Bordet and Gay: Studies in Immunity, p. 363).

Another evidence of the extent to which German science has imposed on us is the frequent incorrect use of the reaction designated as deviation of complement (Neisser-Wechsberg phenomenon) when the fixation reaction of Bordet and Gengou is in reality intended. As an example, one may instance a recent editorial in The Journal ("The Complement Deviation Reaction in Tuberculosis," Aug. 9, 1919, p. 424). It seems scarcely necessary to reiterate that the two reactions are quite different in detail, significance and applicability, and the choice of the German and incorrect reaction for the Franco-Belgian phenomenon is more than the result of chance.

It will probably be years before these incorrect hypotheses and terms riveted on our literature by successful German propaganda are eliminated. Now, however, would seem the suitable moment to begin the process of freeing ourselves from some of these fetters.

Frederick P. Gay, M.D., Berkeley, Calif.

THE CAUSE OF EDEMA

To the Editor:—The editorial comment on "The Cause of War Edema" (The Journal, July 26, 1919, p. 274) refers to an article (Kohman: War Dropsy, *Proc. Soc. Exper. Biol. & Med.* **16**:121 [April 16] 1919) in which the views concerning the rôle of protein in the causation and relief of "war edema" are similar to those expressed by me on various occasions, concerning the development of edema in certain types of renal disease. It may be of interest to refer to the two papers published by me on the subject:

1. The Nature and Treatment of Chronic Parenchymatous Nephritis, The Journal, Aug. 11, 1917, pp. 444-447.
2. Concerning the Causation of Edema in Chronic Parenchymatous Nephritis, *Am. J. M. Sc.* **154**:638 (Nov.) 1917.

My object in writing is not merely to call attention to these publications but to add corroborative evidence on the probable cause of the condition, which has been little understood in the past. Albert A. Epstein, M.D., New York.

Comment.—Miss Kohman, whose work was commented on in our editorial, observed the appearance of an unusual edema in animals that were kept on a ration in which carrots supplied the protein. Obviously the nitrogenous intake was at a rather low plane. When protein was added from other sources the edema was averted.

Edema is known to occur in man in cases of chronic parenchymatous nephritis. Epstein's hypothesis for its production (*Am. J. M. Sc.* **154**:638 [Nov.] 1917) is briefly as follows: In this disease a hydremia undeniably occurs; and in the parenchymatous type the amount of protein in the blood is markedly diminished, presumably because of the loss of protein in the urine. The decrease seems to be proportional to the duration and intensity of the disease. We may assume on the basis of Starling's views that the loss of protein incurred by the blood serum through the continuous albuminuria causes a decrease in the osmotic pressure of the blood, thereby favoring the absorption or imbibition and retention of fluid by the tissues.

According to Epstein, therefore, the problem in the treatment of edema in chronic parenchymatous nephritis is to relieve the condition and prevent its occurrence. Mere removal of the effusion fluid is not sufficient. A normal condition of the blood must be restored and nutrition must be improved. Massive transfusion has a partial usefulness, but adequate dietary measures are most potent. Epstein's plan consists in the administration of large quantities of properly selected protein with a minimum of carbohydrates and the exclusion of fats. He restricts the carbohydrates "to promote a maximum assimilation of protein and to exclude the greater production and retention of water which is incidental to the metabolism of carbohydrates."

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

BENZYL BENZOATE AND AROMATIC ELIXIR OF ERIODICTYON

To the Editor:—Will you be kind enough to have some one look up the place or places where I can obtain benzyl benzoate? I have been reading the articles on the use of that drug but cannot find any drug firm that makes it. Jesse L. Russell, M.D., Adairville, Ky.

To the Editor:—Kindly advise me where (1) benzyl benzoate and (2) elixir of eriodictyon may be obtained.

T. G. H. Drake, M.D., Caron, Sask.

Answer.—1. The Journal has received numerous inquiries relative to benzyl benzoate, a substance which is discussed in two articles in The Journal, Aug. 23, 1919, by Dr. David I. Macht, "A Therapeutic Study, Pharmacologic and Clinical, of Benzyl Benzoate," and by Dr. Jennings C. Litzenberg, "The Use of Benzyl Benzoate in Dysmenorrhea." The only preparation thus far accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies is that manufactured by Hynson, Westcott & Dunning, Baltimore (see New and Nonofficial Remedies, 1919, p. 53). The drug may be obtained directly through this company or indirectly through wholesale pharmaceutical companies.

2. Eriodictyon—yerba santa leaves—is official in the United States Pharmacopeia. The elixir is included in the National Formulary; it contains fluidextract of eriodictyon, 6 per cent.; compound elixir of taraxacum, about 44 per cent., and syrup (see Epitome of the Pharmacopeia of the United States and the National Formulary, p. 83).

NICKEL DERMATITIS

To the Editor:—Can you recommend prophylactic or active treatment for the dermatitis caused by working in nickel plating?

A. L. C.

Answer.—An eczematous inflammation of the skin has been described as occurring among workers in nickel plating establishments. The disease affects the hands first and may spread over the arms, occasionally even involving the skin of the entire body. The skin becomes inflamed, and vesicles appear on the affected part. The nickel sulphate used in electrolytic baths is believed to be responsible for the eruption. The application to the skin of cream or petrolatum is recommended, both as a prophylactic and as a remedial agent. Careful cleanliness and attention given the skin is considered to be by far the most reliable protection against the disease.

PROTEOGENS

To the Editor:—I have just returned to my practice after two years and more of absence in the service. I find myself unacquainted with many new theories and drugs. Just at present I am being flooded with many reprints on new drugs, among which numbers are samples and literature that sounds good referring to Proteogen and more particularly to that of the William S. Merrell Company. What is the standing of this product with the Council?

S. E. R., Rutland, Vt.

Answer.—There have probably been no epoch-making advances in medicine during the last two years. As to proteogen: this was discussed in the Council report published in The Journal, July 12, p. 128.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 7. Sec., Dr. Allen H. Williams, 219 Goodrich Bldg., Phoenix.

CALIFORNIA: Sacramento, Oct. 20-23, Sec., Dr. Chas. B. Pinkham, Butler Bldg., San Francisco.

COLORADO: Denver, Oct. 7. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 14-16. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

GEORGIA: Atlanta, Oct. 14-15. Sec., Dr. C. T. Nolan, Marietta.

HAWAII: Honolulu, Sept. 8-10. Sec., Dr. J. R. Judd, Honolulu, Hawaii.

IDAHO: Boise, Oct. 7. Hon. Robt. O. Jones, Commissioner of Law Enforcement, Boise.

ILLINOIS: Chicago, Sept. 22-25. Sec., Mr. Francis W. Shepardson, Capitol Bldg., Springfield.

IOWA: Des Moines, Sept. 16-18. Sec., Dr. Guilford H. Sumner.

KANSAS: Topeka, Oct. 14. Sec., Dr. H. A. Dykes, Lebanon.

MASSACHUSETTS: Boston, Sept. 9-11. Sec., Dr. Walter P. Bowers, State House, Boston, Mass.

MICHIGAN: Lansing, Oct. 14-16. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, Oct. 7-9. Sec., Dr. Thos. McDavitt, 741 Lowry Bldg., St. Paul.

MISSOURI: Kansas City, Oct. 7-9. Sec., Dr. Geo. H. Jones, State House, Jefferson City.

MONTANA: Helena, Oct. 7. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NEW HAMPSHIRE: Concord, Sept. 11-12. Sec., Dr. Chas. Duncan, Concord, New Hampshire.

NEW JERSEY: Trenton, Oct. 21-22. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, Oct. 13-14. Sec., Dr. R. E. McBride, Las Cruces.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 16-19. Mr. Herbert J. Hamilton, Assistant, Professional Examinations, Albany.

OKLAHOMA: Oklahoma City, Oct. 7-8. Sec., Dr. J. J. Williams, Weatherford.

RHODE ISLAND: Providence, Oct. 2-3. Sec., Dr. B. U. Richards, State House, Providence.

UTAH: Salt Lake City, Oct. 6-7. Sec., Dr. G. F. Harding, Templeton Bldg., Salt Lake City.

WEST VIRGINIA: Charleston, Oct. 14. Sec., Dr. S. L. Jepson, Masonic Bldg., Charleston.

WYOMING: Cheyenne, Oct. 6-8. Sec., Dr. J. D. Shingle, Cheyenne.

Georgia June Examination

Dr. C. T. Nolan, secretary of the Georgia State Board of Medical Examiners, reports the written examination held at Atlanta and Augusta, June 5-6, 1919. The examination covered 10 subjects and included 100 questions. An average of 80 per cent. was required to pass. Of the 25 candidates examined, 21 passed and 4 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Atlanta College of Physicians and Surgeons	(1903)	82.9
Atlanta Medical College	(1915)	88.7
University of Georgia (1919) 87.5, 89.4, 90.3, 90.5, 91.1, 91.1, 91.8.		
Loyola University, Chicago	(1918)	90.3, 90.9
Rush Medical College	(1916)	91.9
University of Maryland	(1912)	90.6
Columbia University	(1916)	88.6, 91.6, (1918) 89.1
Meharry Medical College (1919) 83, 84.4, 88, 89.8.		
University of Virginia	(1919)	90.9
FAILED		
Birmingham Medical College	(1915)	77.3
Southern College of Medicine and Surgery	(1913)	73.3
Maryland Medical College	(1904)	62.1
Meharry Medical College	(1917)	76.6

Dr. Nolan also reports that 16 candidates were licensed through reciprocity from March 26 to June 5, 1919. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Indiana University	(1908)	Indiana
Hospital College of Medicine, Louisville	(1907)	Kentucky
University of Louisville	(1916)	Kentucky
Tulane University	(1915)	Louisiana
University of Maryland	(1904)	Maryland
Johns Hopkins University	(1900)	N. Carolina
	(1915), (1917), (1918)	Maryland
University of Michigan Medical School	(1917)	Michigan
Jefferson Medical College	(1917)	New Jersey
Woman's Medical College of Pennsylvania	(1914)	Penna.
Medical College of South Carolina	(1895)	Alabama
Chattanooga Medical College	(1898)	Alabama
Memphis Hospital Medical College	(1911)	Oklahoma
University of Virginia	(1915)	Virginia

Book Notices

THE AFTER TREATMENT OF WOUNDS AND INJURIES. By R. C. Elmslie, M.S., F.R.C.S., Brevet-Major R.A.M.C., Special Military Surgical Hospital, Shepherd's Bush. Cloth. Price, $4 net. Pp. 323, with 144 illustrations. Philadelphia: P. Blakiston's Son & Co., 1919.

There has always been a strong tendency to lay stress on the problems of diagnosis and immediate treatment of the sick and injured, while few authors have ever taken the trouble to follow the treatment of patients with disability through to the point at which the maximum degree of usefulness of the body has been restored. There has been a marked change in our attitude regarding these matters in the past few years, inaugurated by the increasing demands of the rapidly multiplying industrial compensation laws, and brought to a sharp focus by the tremendous problems in physical reconstruction or restitution precipitated by the war. Never before have governments evinced such a definite sense of responsibility to their disabled soldiers as to undertake to restore them to a condition as sound physically as may be before turning them back to civil life on their own responsibility. One result of this has been the concentration of groups of medical officers on the problems of after-treatment under conditions that permit a thorough study of an almost endless variety of pathologic conditions due to trauma. "The After Treatment of Wounds and Injuries" is one of the products of this enlightened policy, and in excellence of plan, scope of material and clearness of exposition it sets a standard for books in this field. The book is a fine sample of exposition by example; the author states the general principles underlying the treatment of certain conditions and follows this by the description of cases in which the treatment described was carried out, in this way making his point plain without becoming verbose.

The keynote of the book is found in the opening sentence: "The ultimate aim of military surgery is to restore the functional utility of the damaged part of the body." With this as the ideal, the author strives to impart that knowledge of pathology and clear appreciation of mechanics which are necessary for the realization of the ideal. The first chapter is devoted to a statement of the principles of reparative surgery. In the second chapter we find a discussion of the treatment of chronic osteomyelitis. The third and fourth chapters deal with the question of malunion of fractures, delayed union and nonunion; the following two chapters are devoted to the reparative surgery of joints; following this, in the order named, are chapters devoted to injuries of the nerves; pathology and diagnosis; surgical treatment of nerve injuries; injuries of the muscles, tendons and skin; functional disabilities; amputations; repair in the upper limb, taking up here the various conditions which may be encountered, such as flail elbow, malunion of the radius or stiffness of the joints of the hand, and showing the application of the principles previously outlined to the management of each condition; injuries of nerves of the upper limb; repair in the lower limb; injuries of nerves of the lower limb; injuries of the spine; splints and surgical appliances; plaster-of-Paris technic, and physiotherapy.

This book is a distinct addition to the literature of reparative surgery and will doubtless be of great value to all who are interested in that work.

COLLOIDS IN BIOLOGY AND MEDICINE. By Prof. H. Bechhold. Authorized Translation from the Second German Edition, with Notes and Emendations, by Jesse G. M. Bullowa, A.B., M.D., Assistant Clinical Professor of Medicine, Fordham University. Cloth. Price, $5 net. Pp. 464, with 54 illustrations. New York: D. Van Nostrand Company, 1919.

This is a lucid account of colloidal chemistry and its application in medical biology. The author reviews the fundamentals of colloids, the physical phenomena peculiar to this field, and the methods of colloidal research. The biocolloid carbohydrates, proteins, other food products and condiments, enzymes, and immunity reactions are considered especially with regard to the colloidal properties manifested, and the bearing of these on vital and on in vitro activities. That portion of the text dealing with the organism as a colloid

system presents the colloid reactions concerned with the distribution of water in normal and diseased tissues. Fischer's theory of edema is discussed fully. There follows a similar discussion of salt distribution, assimilation and dissimilation —processes involving the conversion of crystalloid foodstuff into colloids which may be retained for use. Growth, the formation of layered structures, ossification, and certain pathologic changes are given a colloidal chemical basis. The colloidal chemistry of cells, the movement of organisms and muscle contraction, blood, respiration, circulation, absorption, secretion and excretion are fully discussed, with certain reference also to diseased conditions. The final chapters deal chiefly with the action of foreign chemical substances and organisms, and microscopic technic, both rather broadly. This discussion of colloids in numerous phases of medical biology is especially valuable as a reference to investigators in this or related fields, but is also a pleasing stimulus to the broadly trained, aggressive physician.

AN OUTLINE OF GENITO-URINARY SURGERY. By George Gilbert Smith, M.D., F.A.C.S., Genito-Urinary Surgeon to Outpatients, Massachusetts General Hospital. Authority to publish Granted by the Surgeon-General, U. S. Army. Illustrations by H. F. Aitken. Cloth. Price, $2.75 net. Pp. 301, with 71 illustrations. Philadelphia: W. B. Saunders Company, 1919.

It is rather disappointing to note that neither in content nor in form of expression has the author succeeded in reaching his ambition as expressed in the preface: "The following pages are an attempt to simplify the rather complex subject of genito-urinary disease."

Accuracy of definition and clarity of description are lacking throughout. A few quotations: "In bladders distorted . . . the ureters may be impossible to find" (page 30). "Gonorrhea is at first a disease of the wall of the urethra" (page 77). Mucosa is evidently meant. "A band of scar tissue in the urethral mucosa and submucosa extending around the urethra is a stricture" (page 95). Stricture is not a band but a condition of narrowing of the potential urethral lumen by persistent pathologic changes. Scar tissue in the urethral wall running in a longitudinal direction may also diminish the caliber of the canal. "The resilient or gristly stricture may resist all attempts at dilatation" (page 98). A stricture may be resilient because of the presence of a great number of elastic fibers in the scar tissue. Such a stricture is easily dilated, but very promptly contracts after the removal of the instrument used in dilatation. "A collection of watery fluid is a hydrocele; of spermatic fluid a spermatocele; of blood a hematocele" (page 163). "Practically never do we find infection of the bladder without underlying cause" (page 190). "The escaped urine infiltrates the alveolar tissue of the pelvis and later forms an abscess" (page 214).

In his diagnostic and therapeutic suggestions, the author will undoubtedly encounter opposition. The recommendation of putting a female patient in the knee-chest position for urethroscopy will not be favorably received by most of the interested specialists. This posture is repulsive to most women and disadvantageous to the examiner. The instillation into the urethra of a 4 per cent. cocain solution before cystoscopy, as advised by the author, is a risky procedure. The urethra, especially if eroded, may absorb the cocain so rapidly that severe and even fatal intoxication may result. In the discussion of bubo due to chancroid, the extirpation of the diseased glandular mass is not mentioned at all. The plugging of the prepuce with gauze during acute gonorrhea will certainly not receive the approval of most urologists. The description of the diagnostic value of bougie à boule is contrary to the essentials of its use. The optimism of the author in designating a perineal urethrotomy for stricture as a simple enough operation, if a guide can be passed through the urethra previous to operation, will not be shared by experienced operators. In the discussion of hypertrophy of the prostate in men of advanced years, the now generally accepted Zuckerkandl-Tandler theory is not even mentioned. It is hard to understand how the author succeeds in making the diagnosis of residual urine by rectal palpation and suprapubic percussion. The so-called Army operation is the only one described in the chapter on varicocele, a method which many have long since discarded because of the frequency of recurrences and the failure to care properly for the open inguinal canal.

Medicolegal

Husband Held Liable for Services Rendered to Wife

(Reahard v. Miller (Colo.), 179 Pac. R. 157)

The Supreme Court of Colorado, in affirming a judgment for $200 in favor of plaintiff Miller, a physician, says that this was an action brought by him against defendant Reahard to recover for medical and surgical services rendered to the latter's wife. The plaintiff, for his right to recover, relied on the common law liability of the defendant, as a husband, for necessaries furnished to the wife. The defendant sought to defeat recovery on the ground that, as he claimed, his wife had left him without cause about six months prior to the time the services in question were rendered, and continued to live separate and apart from him up to the time of her death, which occurred shortly after the services, including a surgical operation, were rendered. There was no evidence that the defendant had a home prepared and ready for his wife at any other place than that where she was staying at and before the time the plaintiff's services were sought and engaged. She was then staying at a rooming house. The defendant frequently visited her, and stayed at the rooming house many nights, and during a part of the time remained there every night. It was testified that immediately after his wife died the defendant requested that her earrings be taken off. The evidence also showed that he visited the hospital where his wife was receiving medical and surgical treatment. He held himself out to the plaintiff, and to others, as the husband of the patient. The plaintiff testified that, after her death, in a conversation relating to his compensation, the defendant said "he would pay the bill." These and other circumstances justified the trial court in findnig the issues for the plaintiff, and supported the conclusion that there had been no separation between the defendant and his wife. On the whole evidence the supreme court cannot say that the trial court was not warranted in resolving all material issues in favor of the plaintiff. It is of the opinion that there was sufficient evidence to support the findings and judgment.

Diagnosing and Treating Pregnancy as Kidney Trouble

(Stevenson v. Yates (Ky.), 208 S. W. R. 820)

The Court of Appeals of Kentucky reverses a judgment that dismissed the plaintiff's petition after a verdict for the defendant had been directed, and orders a new trial, in this action against a woman physician for alleged malpractice in diagnosing and treating a case of pregnancy as one of kidney trouble. The court says that the plaintiff, a married woman 42 years old, in February went to the defendant for proper treatment. This, of course, required as a prerequisite a proper diagnosis of the plaintiff's affliction. The symptoms which she related to the defendant were that she was suffering with shortness of breath, with pains in her back and stomach, and perhaps some others. The defendant made no physical examination, but stood behind the plaintiff while she was seated in a chair and held the plaintiff's hands for about ten minutes, when she told the plaintiff that she was suffering with kidney trouble. She prescribed for the plaintiff, and continued to treat her, without her improving, until in October. In June, the plaintiff having experienced a crawling sensation in the lower part of her abdomen, reported it to the defendant and asked her if it could be possible that she was pregnant, and was told that she was not. Throughout the whole time the plaintiff had no periods of menstruation, but on October 19 had a slight hemorrhage, of which the defendant was notified by telephone, as well as of other conditions and symptoms; and the defendant expressed satisfaction over what she said was a return of the plaintiff's

menses, and asked her to visit her office on the following Saturday, October 23. But on Saturday morning another physician was called in, who discovered that the plaintiff was then in labor. She was removed to a hospital, where about 7 o'clock that night a fully developed dead child was taken from her with the aid of instruments.

The law is well settled in this and the court believes in all jurisdictions that a physician or surgeon is answerable for an injury to his patient resulting from want of the requisite knowledge and skill, or from the omission to use reasonable care and diligence in the treatment of the patient or to exercise such case and dilgence to discover the patient's malady. Concerning the standard of knowledge and skill and the required case which the physician should possess and exercise under this rule, it is quite generally agreed that he is bound to bestow such reasonable and ordinary care, skill and diligence as physicians and surgeons in similar neighborhoods and surroundings engaged in the same general line of practice ordinarily have and exercise in like cases.

The court cannot escape the conviction that it was error to direct a verdict in favor of the defendant. By the motion therefor it was admitted that the defendant was either greatly unskilful or grossly negligent in failing to diagnose properly the plaintiff's case, and because of that, or for other reasons equally negligent or unskilful, wrongly advised her as to exercise she should take and the labor she should perform, and in addition gave her medicines of sufficient strength to produce at once pain, rigors, nausea, nervousness and other weakening and debilitating effects. It was true it did not appear what was the quality or character of the medicines prescribed; but the court thinks that in a case like this, in which the plaintiff is wholly ignorant as to such facts, when she shows the effects and consequences which the taking of the medicine produced, the burden shifts to the defendant to show that such consequences and effects were not the results of the medicine, and furthermore that the defendant, under facts similar to those here, should be called on to show that the advice given as to exercise and labor (as to continue all housework) could not and did not produce injurious results.

The court is not now called on to determine the question of whether the death of the plaintiff's child would be a proper element of damage in a suit by the mother, should the proof show it to have been brought about by the unskilful and careless treatment of the defendant.

On Regulating Practice of Optometry and Medicine

(Price v. State (Wis.), 171 N. W. R. 77)

The Supreme Court of Wisconsin, in holding constitutional Section 1435 f 35 of the statutes of that state, regulating the practice of optometry, says that, although the regulation of the practice of optometry is a comparatively recent idea, upward of forty states of the Union have legislated on the subject. So far as the case of *People* v. *Griffith*, 280 Ill. 18, 117 N. E. 195, denies the power of the state to enact such legislation, the Supreme Court of Wisconsin is not impressed with the logic thereof. It was suggested that the Wisconsin statute was invalid because it permitted persons to select their own glasses when, as the evidence showed, harm might result therefrom. This was akin to the argument that the law regulating the practice of medicine is void because it does not prohibit the individual from buying a standard or "patent" remedy for a common ailment. At the risk of dignifying the suggestion the court will say, in the first place, that the legislature has not assumed to protect the individual from his own folly. The legislation merely aims to secure a minimum of knowledge on the part of those who hold themselves out as competent to practice optometry. In the second place, an attempt of the legislature to suppress or minimize an evil is not to be held innocuous because it does not entirely eradicate it. The law is not void because physicians and surgeons, and persons who sell spectacles without attempting to test the eyes, are exempted from its provisions. The propriety of the exemption is so manifest that discussion of the reasons therefor would be but to attempt to demonstrate the obvious.

Society Proceedings

COMING MEETINGS

American Academy of Medicine, Harrisburg, Pa., Sept. 23.
American Academy of Ophth. and Oto-Lar., Cleveland, O., Oct. 16-18.
American Assn. Medical Milk Commissioners, New Orleans, Oct. 27-30.
American Assn. of Electro-Therap. & Radiol., Philadelphia, Sept. 16-19.
Am. Assn. of Obstetricians and Gynecologists, Cincinnati, Sept. 15-17.
American Assn. of Railway Surgeons, Chicago, Oct. 15-17.
American Public Health Assn., New Orleans, Oct. 27-30.
Colorado State Medical Society, Denver, Oct. 7-9.
Delaware State Medical Society, Dover, Oct. 13-14.
Indiana State Medical Assn., Indianapolis, Sept. 24-26.
Medical Society of the Missouri Valley, Des Moines, Sept. 18-19.
Mississippi Valley Medical Assn., Louisville, Ky., Oct. 21-23.
New Mexico Medical Society, Albuquerque, Oct. 3-4.
Pennsylvania State Medical Society, Harrisburg, Sept. 22-25.
Utah State Medical Association, Salt Lake City, Sept. 9-10.
Vermont State Medical Society, Burlington, Oct. 9-10.
Washington State Medical Association, Spokane, Sept. 11-13.
Wisconsin State Medical Society, Milwaukee, Oct. 1-3.
Wyoming State Medical Society, Thermopolis, Sept. 10-11.

AMERICAN SOCIETY FOR CLINICAL INVESTIGATION

Annual Meeting, held in Atlantic City, N. J., June 14, 1919

(Continued from page 715)

Desensitization in Cases of Food Idiosyncrasy

DR. OSCAR M. SCHLOSS, New York: Investigations were made on eight infants affected with idiosyncrasy to egg to determine the occurrence and duration of desensitization after the development of toxic symptoms. These observations extended over a period of from two to six and one-half years. The patients developed urticaria from one to three hours after egg was ingested. No other symptoms occurred, as a rule. Desensitization always occurred after the development of toxic symptoms. It lasted from thirty-three to forty-five days. The period varied in different infants, but was usually the same in each individual. During this time egg white could be ingested without harmful effect, and the cutaneous test to egg protein was negative. The cutaneous test to egg protein and the development of toxic symptoms after the ingestion of egg white were in close accord. The return of sensitiveness was usually abrupt. For example, on one day the cutaneous test might be negative, and the patient could eat egg white without harm; forty-eight hours later the cutaneous test might be positive and the ingestion of egg white cause severe urticaria. Two of the patients became immune at the end of one and one-half and two years, respectively. Three of the remaining six patients were desensitized by feeding with large amounts of egg protein.

Protective Power of Normal Human Serum Against Pneumococcus Infection

DR. PAUL W. CLOUGH, Baltimore: The protective power of the serum of twenty-five normal individuals was tested against infection with highly virulent strains of pneumococci belonging to Types I, II and III. Of eighteen serums tested with a Type I pneumococcus, four showed protective power. Of eighteen tested with a Type II strain, eight protected; and of nineteen tested with Type III, eight protected. If the protection tests with all three fixed types be grouped together, nineteen, or 35 per cent., showed protective power from 10 minimum lethal doses or more of culture; eleven, or 20 per cent., from 100 minimum lethal doses or more; and six, or 10 per cent., from 1,000 to 100,000 minimum lethel doses. The protective power of the most active normal serums was therefore as great as that reported in the serum of patients recovering from pneumonia, or of vaccinated individuals. In none of these serums was it possible to demonstrate the presence of agglutinins, bacteriotropins, precipitins or bacteriolysins. The protective power was manifested when the serum was injected subcutaneously and the culture later injected intraperitoneally, as well as when mixtures of culture and serum were injected intraperitoneally. No summation of protective power could be demonstrated by combining a highly protective normal serum with an artificial

immune serum. It seems probable that protective power of the serum in those normal individuals who possess it, as well as in vaccinated individuals, indicates an unusual degree of natural resistance to pneumococcus infection.

DISCUSSION

DR. RUSSELL L. CECIL, Washington, D. C.: In the study of immunity in experimental lobar pneumonia, no definite relationship could be established between active immunity and the presence of agglutinins and protective bodies in the serum. Following vaccination or an actual attack of pneumonia, monkeys may or may not develop agglutinins and protective bodies in their serum. Active immunity, however, is apparently independent of this phenomenon. Some monkeys showed definite active immunity though they possessed no protective bodies in their blood; on the contrary, certain monkeys that showed high protection in their serum failed to resist infection with the pneumococcus when it was injected intratracheally.

Relation of Pneumococcus to H-Ion Concentration, Acid Death Point and Dissolution of Organism

DRS. FREDERICK T. LORD and ROBERT N. NYE, Boston. In the growth and death of the pneumococcus in fluid medium containing 1 per cent. of glucose the production of acid is the most important bactericidal factor. One per cent. glucose bouillon cultures of the pneumococcus allowed to grow and die out usually reach a final acidity of a p_H of about 5.1. At a H-ion concentration of about 5.1 or higher, the pneumococcus does not survive longer than a few hours; in H-ion concentrations of from 6.8 to 7.4 per cent. The pneumococcus may live for at least many days. In the intervening H-ion concentrations, between 6.8 and 5.1, the pneumococcus is usually killed with a rapidity which bears a direct relation to the H-ion concentration; that is, the greater the acidity the more rapid the death. Cloudy suspensions of washed pneumococci in H-ion concentrations varying from 8.0 to 4.0 show, after incubation, dissolution of organisms in lower H-ion concentrations than about 5.0. This dissolution is most marked at from 5.0 to 6.0. Some dissolution also takes place toward the more alkaline end of the scale. No dissolution occurs at the most acid end of the scale.

Comparison of Medical Casualties Among British and American Troops in General Hospital in France

DRS. REGINALD FITZ and ALICE CUNNINGHAM, Boston: A statistical comparison was made of the common diseases occurring in British and American troops who were admitted to U. S. Army Base Hospital No. 5 from Flanders and northern France during 1918. Each body of men tended to have the same common illnesses, but in differen proportions. The British had many cases of trench fever and trench nephritis. These diseases were comparatively uncommon among the Americans. The Americans had many casualties from diarrhea and indigestion, while the British suffered from casualties due to physical strain and fatigue. The Americans more than the British seemed to develop an acute exacerbation of any chronic or latent disease to which they had any tendency from inheritance or previous history. These differences were in part due to the facts that a certain number of men constitutionally unfitted to military life had not been weeded out from the Americans at the outset and that there were too few officers and noncommissioned officers who were trained to enforce the disciplinary and hygienic measures designed to keep medical casualties as small as possible.

Management of Postpneumonic Empyema

DR. WILLARD J. STONE, Toledo, Ohio: Among eighty-five patients with empyema on whom operation was performed as soon as the empyema was diagnosed, the mortality was 61.2 per cent. Among 190 patients on whom late operation was performed for empyema, that is, following a series of preliminary aspirations and after subsidence of the acute pneumonic process, the mortality was 12.6 per cent. In the last ninety-four operations the mortality following this plan of procedure was 9.5 per cent. Although types of infection with varying virulence may have accounted for the decreased mortality, it is believed that operation prior to the subsidence of the acute pneumonia, and before adhesions have immobilized the mediastinum, is accompanied with greatly increased risk. In both those operated on early and those operated on late the infectious agent was found to be a hemolytic streptococcus in more than 70 per cent. of the cases. The late operation showed a much greater percentage of recoveries for streptococcus infection than the early operation. After adhesions have limited the mobility of the mediastinum, the pressure changes incident to an open pneumothorax do not affect, to so great a degree, the opposite lung, and operation may be performed with greater safety. Preliminary aspirations were performed every day or alternate day to remove the pus. The late operation was performed from the twelfth to the fifteenth day and was usually done under local anesthesia. A Brewer tube, to which was attached an Ewald bulb for suction, was used. Surgical solution of chlorinated soda (Dakin's solution) was used as an irrigating fluid through a Carrel tube which was passed through the flanges of the Brewer tube. The five most common complications after operation, as a cause of death, were, in order of frequency, nephritis, pericarditis (usually purulent), peritonitis, substernal pus pockets, and lung abscesses. In the patients on whom early operation was performed, an active pneumonia was usually found to be present in both lungs.

Harmful Effects of Shallow Breathing

DR. JOHN C. MEAKINS, Montreal: It has been shown by Haldane, Meakins and Priestley that rapid, shallow breathing leads to anoxemia, and also that one of the effects of anoxemia may be the production of this type of breathing. Therefore, under certain circumstances a vicious circle may be established. There is a clear relationship between the respiratory rate and the cyanosis which is undoubtedly due to anoxemia in acute pneumonia. As the respiratory rate increases the volume per respiration decreases, and the total ventilation per minute rises above normal. If the respiratory rate increases beyond 50 per minute, cyanosis is likely to appear. If this extreme rate persists, cyanosis gradually increases until the cardiovascular system eventually begins to fail. The respiratory rate and the cyanosis are not necessarily dependent on the extent of pulmonary involvement: it may be extreme, when there is evidence of comparatively slight consolidation, and may not appear even when the greater part of one lung is evidently consolidated. Another point which must be taken into consideration is that of the quantity of blood which may be circulating through the consolidated area. It has been shown by Gross that this may be considerable. Such blood is not oxygenated, and joins the mixed arterial blood to produce a general diminution of the total oxygen content of the circulating blood. This may play a comparatively small rôle in the production of cyanosis. The fact remains, however, that when crisis occurs, and the respiratory rate diminishes, the cyanosis disappears in spite of the fact that the consolidation remains some time. Therefore it may be concluded that rapid, shallow breathing occurring in pneumonia is a very dangerous condition in consequence of the anoxemia which results from it.

Clinical Significance of the Suprarenal or Other Endocrine Glands in Influenza and Influenzal Pneumonia

DRS. D. M. COWIE and P. D. BEAVEN, Ann Arbor, Mich.: Being unable to convince ourselves that there was any serious cardiovascular disturbance in the large majority of cases of influenza and influenzal pneumonia to explain the marked asthenia and low blood pressure, we became interested in the possibility of suprarenal dysfunction or some other endocrine disturbance being responsible for this group of symptoms. Necropsy reports reveal hypoplasia of the suprarenals and evidence of suprarenal dysfunction. The appearance of suprarenal dysfunction in influenza and influenzal pneumonia is suggested clinically by the cardinal symptoms: a characteristic rise in blood pressure following the prolonged administration of epinephrin, the prolonged blood pressure curve following the administration of 1 mg. of epinephrin. That an endocrine disturbance is present in influenzal pneumonia is further suggested by a prolonged blood sugar curve after injection of epinephrin, and a prolonged

blood sugar curve after ingestion of glucose. Hypoglycemia is not present in influenza and influenzal pneumonia as has been found to be the case in some diseases of endocrine origin. If epinephrin is of any use in the treatment of the symptoms of suprarenal dysfunction, the proper method of administering the epinephrin seems not yet to have been found.

DISCUSSION

DR. FRANCIS G. BLAKE, Washington, D. C.: In a series of about 250 necropsies of cases of influenzal pneumonia at Camp Pike, two cases with markedly hemorrhagic suprarenal glands were noted.

DR. E. C. ROSENOW, Rochester, Minn.: In connection with Dr. Cowie's clinical observations, it is of interest to note that guinea-pigs injected with the strains from typical cases of influenza commonly showed swelling, edema and hemorrhage of the suprarenals. This was particularly marked in the case of some strains.

DR. C. P. HOWARD, Iowa City: We, too, were struck with the profound prostration and weak pulse in these cases, and were much interested in being told by our pathologists that in one or two cases there was some abnormality in the suprarenals. Might this not also explain the absence of a leukocytosis in this disease, as we have shown elsewhere that in polyglandular insufficiency there is an absence of the normal leukocytic response to the subcutaneous injection of epinephrin?

(To be continued)

AMERICAN ORTHOPEDIC ASSOCIATION

Thirty-Third Annual Meeting, Atlantic City, N. J., June 14-17, 1919

(Concluded from page 718)

Personal Experience with Lane's Plate in Fractures

DR. PAUL P. SWEET, Hartford, Conn.: Among 1,560 fractures of the long bones observed during a three year period, there were 172 open operations; forty-one for compound fractures, and 129 for reduction of simple fracture, and delayed, nonunion or vicious union. Lane plates were applied in twenty-eight instances. Primary healing of the operative wound was obtained in every case except two compound fractures with severe displacement. Excellent final results were obtained, however, in spite of this risk. In four cases, sinuses developed after some weeks. On removal of the plates, the sinuses closed, except in one instance in which a low grade osteomyelitis was caused by the plate. The plates and screws in this instance had been handled by the operator. The patients were all urged to have the plates removed after firm union had taken place, and this was done in four instances. No abnormal bony reaction or tissue reaction had been found. In one case a plate was placed on the femur eighteen months after the fracture, and the result was excellent. Probably removal of considerable bone, and apposition of healthy nonsclerotic fragments, explained this success. The cases of sinus all occurred in the radius and ulna, or tibia and fibula; there was no trouble in any of the femur cases. It seems, then, that Lane plates offer a satisfactory means of fixation in selected cases. They are more efficient than other agents in highly comminuted fractures, when other fixation materials may increase the trauma.

Points to Be Observed in the First Ten Days of the Treatment of Compound Fractures

DR. H. WINNETT ORR, Lincoln, Neb.: I wish to insist on immediate or very early restoration of parts in a compound fracture to as nearly a normal position as possible. Following these methods of fixation which actually do maintain position with length and in which the immobilization is as perfect as possible, experience of the war hospitals has shown that in femurs the practical use of the Thomas splint and plaster of Paris, either or both in some cases, may be made to meet practically every indication. In leg fracture the same thing is true (with a wider field of use for plaster of Paris). In fractures of the upper arm there has been a tendency for too long continued use of the long Thomas splint. The importance of elbow flexion and supination of the hand, to be done not later than two weeks from the time of injury, must be emphasized, especially in fractures of the humerus. Plaster of Paris may also be of the greatest use in these cases. Supination in a Balkan frame in all of these fractures is frequently important and necessary, but the use of weights and pulleys in this connection should not be confused with the occasional use of weights and pulleys for traction, which should certainly be used much less than heretofore.

Disability Following Injuries to the Back in Industrial Accidents

DR. JAMES WARREN SEVER, Boston: Persons suffering injury to the back in industrial occupations suffer long periods of disability. Two facts are noted in these cases: first, that the disability is unusually long, and secondly that medical supervision is not of the best, nor calculated to get the best results. Among 134 cases the average period of disability was about six months. These figures cover the time elapsed from the accident, until seen by me as an impartial examiner for the Industrial Accident Board. In some cases we believed that the man should try and go back to work, but there is no doubt a psychologic factor in many cases. While one cannot say that any are real malingerers, the fact that they receive compensation without working has a good deal to do with disability in many cases. There is no doubt that if proper and skilful medical attention had been given, the disability periods would have been cut in half.

DISCUSSION

DR. COMPTON REILY, Baltimore: This problem is very difficult from the insurance point of view, and as to how long these people should be compensated. I feel, as Dr. Sever does, that many of these men would go back to work much more quickly if there were no question of compensation.

DR. C. S. BALDWIN, Salt Lake City: Early diagnosis of these cases is important. One important point is putting them up on an inclined plane with a Sayre extension apparatus. These injuries result in fracture and displacement of the articulatory surfaces of the bodies of the vertebrae.

Application of Curative Therapy in the Ward

DR. HENRY CHASE MARBLE, Boston: All forms of therapy are united to one end, under a competent surgeon, who can pool his resources to achieve a successful whole. Nurses, orderlies and aides are at his disposal. The latter, working under the direction of the ward surgeon, strive, through simple and graded occupation, first for mental rehabilitation, and secondly for restored function. Direction of a medical officer is necessary so that the correct amount and type of work may be given. Often men most in need of occupation are the hardest to start. Rarely does a man do more than necessary and have to be slowed down. When the patient is up in a wheel chair or about on crutches, some attempt can be made, under careful supervision, toward functional restoration. The required time should be given to occupational therapy, or it fails in its purpose. Physiotherapy ward work is of another type. The aide, under supervision of the medical officer, endeavors to prevent deformity and to stimulate motion. Careful records are kept of improvement. The barometer of motion is always pain. The type of occupational work most suitable is rug making, toy making, weaving, stenciling, printing and bead weaving.

DISCUSSION

DR. ALBERT H. FREIBERG, Cincinnati: It is possible for a human being to reestablish himself without any outside agency. A man should expect help from industry as his heritage; the cripple is going to be better looked after than formerly because of the scientific way in which this question will be treated as the outcome of the war. It depends a great deal on the individual whether he can accomplish big things in spite of his handicap. There is not as yet a completely developed system which can be used as a future textbook, because no one has as yet taken charge of this side of the work. Certain things should be recorded as fundamental, and a systematic arrangement of the therapeutic ideas on the subject should be made under proper supervision of medical men. Any other way is quackery.

Dr. Joel Goldthwaite, Boston: In France, the physical and occupational aides were expected to know both branches. In Boston, a regular curriculum on occupation therapy has been started, so that it will be possible to go there and get a person trained in the particular work wanted.

Dr. John L. Porter, Chicago: From the attitude of the workers and the instructors, the curative side of occupational therapy is likely to be lost to sight. Vocational therapy has a distinct value in keeping the men occupied mentally, but the vocational end does not amount to much. We have had everything taught from handwriting to animal industry, chicken raising and typewriting, but most of the men want to go back to the occupations they had before. A valuable side of curative therapy is the physical end of it.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

August, 1919, **80**, No. 2

*Clinical Study in Preoperative and Postoperative Blood Pressures and Their Relation to Renal Function and in Shock and Hemorrhage. J. O. Polak, Brooklyn.—p. 113.
Obstetric Surgery. E. P. Davis, Philadelphia.—p. 122.
Distribution of Adenomyomata Containing Uterine Mucosa. T. S. Cullen, Baltimore.—p. 130.
Physiology and Pathology of Endometrium. L. W. Strong, New York.—p. 139.
Contributions of William Smellie to Obstetrics. H. Thoms, New Haven.—p. 150.
*Inversion Uterus; Case of Sixteen Months' Standing. G. M. Boyd, Philadelphia.—p. 161.
Indications for Cesarean Section. Ninety-Five Cases. J. C. Applegate, Philadelphia.—p. 167.
*Operation for Restoration of Rectovaginal Septum. H. Koster, Brooklyn.—p. 173.
Is It Possible Through Cooperation of Surgery and Roentgenization in Treatment of Fibromyoma Uteri to Further Improve Results Obtained by Surgery? H. J. Kreutzmann, San Francisco.—p. 179.
*Corpus Luteum Extract in Vomiting of Pregnancy; Report of Cases. J. K. Quigley, Rochester.—p. 183.
Administration of Obstetric Nursery. H. J. W. Morgenthaler, Brooklyn.—p. 186.
*Nutrition of Fetus. J. M. Slemons, New Haven.—p. 194.

Preoperative and Postoperative Blood Pressures.—Polak urges that complete records be made of kidney function and blood pressure in every case before deciding on operation. He has such records of more than 350 consecutive abdominal cases and feels justified in drawing the following conclusions: The pulse pressure is the test of the muscular strength of the individual woman's heart, when endocardial lesions can be excluded. The index of the muscle competency is shown by the relation of the pulse pressure to the systolic pressure which should be as 1 to 3 or more, if the compensation is adequate. The efficiency of the kidney function is directly dependent on the cardiac force of the individual, provided the kidney structures are normal or approximate the normal. Ether anesthesia of one hour's duration does not disturb the relation of the pulse pressure to kidney function, unless the operation is accompanied by considerable loss of blood. When the preoperative kidney function is low, the pulse pressure must be relatively high to compensate for the deficiency, for it does no good to add saline by skin or bowel or by infusion, unless there is sufficient cardiac strength to take it up and carry the column along. When both the pulse pressure and the "phthalein" output are low, or the relation of the pulse pressure to the systolic pressure is as 1 to 2, the operative prognosis should be guarded. Morphin, in large doses, used during operation, seems to help in diminishing the shock, but has a definite effect in diminishing the kidney output. In the majority of cases there is a moderate fall in both the systolic and diastolic blood pressure following ether anesthesia; the inhalation of oxygen after the withdrawal of the ether diminishes this fall, but its effect is only transient. In cases of shock, especially where there has been much blood lost during the operation, the fall in systolic pressure is greater than after a long operation without blood loss. The pulse pressure is a better index of hemorrhage or cardiac failure than the systolic pressure, and finally, there is a constant rise in the leukocyte count in the presence of actual hemorrhage, while the leukocytes fall in shock.

Inversion of Uterus.—In Boyd's opinion hysterectomy is indicated when there exists gangrene or marked infection or a tumor of the uterus, but in clean cases it is unjustifiable. In the acute case, before involution is completed, the uterine musculature is still hypertrophied. It is pliable and will often yield to taxis. Manual reposition should, therefore, be tried in all such cases, but after a month or six weeks the uterus will have returned to its normal size and the tissues become firm and unyielding. In these chronic cases, manual reposition should only be carried out for a short time, if at all. By early operative measures, mortality and the comfort of the patient will be materially improved. Colpohysterotomy is, therefore, the operation of choice in the treatment of difficult cases. It is conservative, simple of execution and can practically be applied to all. Should the anterior operation fail, the posterior wall of the uterus could also be incised. This would undoubtedly make it possible to reposit the uterus. Anterior colpohysterotomy, the Spinelli operation, has certain advantages over the posterior. The field for operation is more accessible and suturing is facilitated.

Restoration of Rectovaginal Septum.—The operation advocated by Koster was devised by the late Dr. Frederick Weisbrod at the Wyckoff Heights hospital, Brooklyn, about fifteen years ago.

Corpus Luteum Extract in Vomiting of Pregnancy.—Quigley treated seventeen patients; twelve were benefited permanently; four had a relapse, and in one case the treatment was a complete failure. The average number of doses was seven; the dose, 0.2 gm., desiccated substance of the gland.

Nutrition of Fetus.—Slemons says that there is no diet specifically adapted to the state of pregnancy; the prospective mother may exercise the same freedom in the selection of food as any one else. She should, however, choose what will agree with her and avoid that which she cannot digest and assimilate. In a practical sense the quantity of the mother's food is more influential than its quality. Popular opinion holds that during pregnancy the mother "should eat for two." This doctrine is erroneous. A diet which has previously been ample will likewise be sufficient throughout pregnancy. And, it is not unimportant to emphasize this view, which has the unqualified support of painstaking, scientific investigations, because overeating during pregnancy is much more likely to provoke discomfort than insufficient nourishment. On the other hand, there can be no justification for measures intended to restrict the growth of the fetus, for when rigidly carried out they tend to weaken the mother. She may be careful, in other words, to avoid overgrowth of the fetus but should not adopt a diet so limited as to interfere with normal development. So long as her health is properly maintained, no thought may be given as to what the size of the fetus is likely to be. At present, provided the physician determines by a thorough, preliminary examination the existence of any disproportion between the size of the fetus and the capacity of the mother's pelvis, he is qualified to decide what the appropriate treatment should be in order to bring pregnancy to a successful termination.

American Journal of Roentgenology, New York City

August, 1919, **6**, No. 8

Injection of Air for Roentgen Diagnosis of Tumors of Bladder. G. E. Pfahler, Philadelphia.—p. 371.
Roentgen Diagnosis of Transdiaphragmatic Hernia of Stomach Resulting from War Wounds. P. Aimé and J. Solomon, France.—p. 376.
Rice Bodies in Ankle Joint. H. K. Pancoast, Philadelphia.—p. 384.
Mastoid Stereoroentgenograms Presenting Variations. B. Allen, Iowa City, Iowa.—p. 385.
An Adaptation of Cross Sectional Anatomy to Localization and Case in Illustration. W. G. Herrman, Asbury Park, N. J.—p. 390.

American Review of Tuberculosis, Baltimore

August, 1919, 3, No. 6

Present Status of Soldiers and Draft Rejects with Tuberculosis. W. H. Baldwin, Washington. D. C.—p. 321.
Tuberculosis Among European Nations at War. J. A. Miller, New York.—p. 337.
*Epidemic Influenza Among Tuberculous Patients at Loomis Sanatorium. J. B. Amberson, Jr., and A. Peters, Jr., Loomis, N. Y.—p. 359.
*Influenza as a Factor in Reactivation of Quiescent and Healed Pulmonary Tuberculosis. R. S. Berghoff, U. S. Army.—p. 370.
*Pulmonary Sequels Following Influenza. W. D. Tewksbury, Washington, D. C.—p. 375.

Influenza at Tuberculosis Sanatorium.—This study of fourteen cases made by Amberson and Peters shows that not only is influenza likely to attack tuberculous sanatorium patients as severely as other individuals, given the necessary conditions of contact and exposure, but its results are likely to be particularly grave in those with massive pulmonary lesions and little pulmonary reserve. It seems likely that a not inconsiderable proportion of individuals with pulmonary tuberculosis suffer exacerbations or relapses as a result of this intercurrent infection. In further support of this view, in taking the histories of patients recently entering the sanatorium, the authors met with a fair number of cases in which the development or exacerbation of manifest tuberculosis followed so soon after an attack of influenza that the causal relationship was very evident.

Reactivation of Tuberculosis by Influenza.—Of thirteen cases of healed and quiescent pulmonary tuberculosis under observation for weeks, presenting at no time evidence of moisture, six cases, or approximately 50 per cent., showed a reactivation and a positive sputum after an attack of influenza. All thirteen influenza convalescents presented evidence of moisture on an average of six weeks after dismissal from the hospital. The râles were of two distinct varieties and because they complicated an already existing healed tuberculous focus they were confusing. The coarse moist râle, abundantly present in all cases, was not unusual and was easily explained. It was the rather typical râle found in many postpneumonic and bronchitic infiltrations, distributed over the entire surface of the lung, most pronounced, perhaps, peribronchially and basally. The interesting and complex finding, also present in all thirteen cases, was a fine moist râle. This râle, except in one or two cases, was confined to an apex or to both apices, and was entirely absent over the bronchi and at the bases. It occurred singly and in showers. Beginning with inspiration, these râles, forming a crescendic shower, covered the entire respiratory cycle. They were in large part unaffected by cough and in some cases augmented by cough and never dispersed, so that fine moist râles were restricted to an apex, occurring in showers, very constant and unaffected by cough. To make the picture simulate still more an active pulmonary tuberculosis, the physical signs of the preexisting healed lesion were present in the same area. And finally, the patient almost invariably had a fever and presented the usual corresponding signs of toxicity. Repeated observations at one week intervals, added one more disturbing element, that of constancy and persistency of symptoms and findings. In two cases which proved nontuberculous, the findings were present for eight weeks.

Pulmonary Sequels of Influenza.—Tewksbury is of the opinion that there will probably be an increase in active tuberculosis due directly to the influenza epidemic. He finds that the type of tuberculosis following influenza seems to respond especially well to pneumothorax treatment.

Annals of Surgery, Philadelphia

August, 1919, 70, No. 2

*Experimental Hydrocephalus. W. E. Dandy, Baltimore.—p. 129.
Concussion of Brain; Study in Diagnosis. J. F. W. Meagher, Brooklyn.—p. 143.
*Traumatic Facial Diplegia. Cases. J. Ransohoff, Cincinnati.—p. 150.
*Clinical Study of Nerve Anastomosis. A. W. Adson, Rochester, Minn.—p. 157.
Rhinophyma; Three Cases. J. H. Gibbon, Philadelphia.—p. 169.
Transthoracic Laparotomy. Case. W. Meyer, New York.—p. 172.
Association of Malignant Myoma with Meckel's Diverticulum. Case. D. Symmers, New York.—p. 183.
Postinfluenzal Abscess of Sheath of Rectus Muscle. Case. H. Gage, Worcester, Mass.—p. 188.
Indications for Operation in Urethral Calculi. D. N. Eisendrath, Chicago.—p. 192.
*Difficulties in Diagnosis and Treatment of Unilateral Renal Tuberculosis. L. Herman, Philadelphia.—p. 203.
Case of Fibroma of Testicle. E. E. H. Beyer, Columbus, Ohio.—p. 210.
New Operating Composite Cystourethroscope. G. Greenberg, New York.—p. 212.
*Dupuytren's Contracture: Description of Operation. A. B. Gill, Philadelphia.—p. 221.
Gunshot Injury of Musculospiral Nerve. F. Reder, St. Louis.—p. 226.
Application of Extension to Overlapping Fractures, Especially of Tibia, by Means of Bone Screws and a Turnbuckle, Without Open Operation. L. Freeman, Denver.—p. 231.
Cancer of Stomach and Its Surgical Treatment. C. H. Mayo, Rochester.—p. 236.
Method of Recording Surgical Operations at Front. A. P. C. Ashhurst, Philadelphia.—p. 241.

Experimental Hydrocephalus.—Experiments were made by Dandy on dogs for the purpose of studying the development of internal hydrocephalus. They showed that hydrocephalus has been produced by placing an obstruction in the aqueduct of Sylvius. Dilatation of the third and both lateral ventricles results. In one case the foramen of Monro was occluded; this was followed by a unilateral hydrocephalus. If the choroid plexus of one lateral ventricle is completely removed at the time the foramen of Monro is occluded, not only does no dilatation occur, but the entire lateral ventricle collapses. This is the only absolute proof that the cerebrospinal fluid is formed from the choroid plexus. At the same time, it proves that the ependyma does not secrete cerebrospinal fluid. If the choroid plexus of both lateral ventricles is removed, and an obstruction is placed in the aqueduct of Sylvius, hydrocephalus still results in the third and both lateral ventricles, but at a reduced rate. The fluid forms from the choroid plexus of the third ventricle but cannot escape into the subarachnoid space. Cerebrospinal fluid forms in all the cerebral ventricles. It is absorbed almost entirely in the subarachnoid space. The sole communication between the ventricular system and the subarachnoid space is through the foramina of Luschka and the median foramen of Magendie. The phenolsulphonephthalein test will prove conclusively whether the formina of Luschka and Magendie are open or closed. Closure of these foramina invariably causes hydrocephalus. Hydrocephalus follows ligation of the vena magna Galeni if the ligature is placed at the origin of this vein. Ligatures beyond or in the sinus rectus have no effect because there is sufficient venous collateral circulation. The communicating type of hydrocephalus has been produced in dogs by a perimesencephalic band of gauze, saturdated in an irritant which induces adhesions. This obstruction prevents cerebrospinal fluid from reaching the cerebral subarachnoid space where most of the cerebrospinal fluid is absorbed. The resultant diminished absorption of fluid results from hydrocephalus. Hydrocephalus follows ligation of the great vein of Galen because of an overproduction of the cerebrospinal fluid. In other types of hydrocephalus, both obstructive and communicating, the accumulation of fluid is due to a diminished absorption of cerebrospinal fluid.

Traumatic Facial Diplegia.—Ransohoff reviews the literature and records one personal case in which the lesion on each side was in the fallopian canal, below the geniculate ganglion, and at a point above where the chorda tympani is given off. It was also below the point where the nerve to the stapedius is given off, since there is no record of hyperacousis. Although there was a fracture across the base of the skull, through the mastoid and petrous portion of the temporal bones, as shown by the ecchymosis behind the ear, neither nerve was severed. Of the right nerve one can be sure of this, since the paralysis did not manifest itself until two days after the injury. Hemorrhage only could have accounted for this late occurrence. On the left side the paralysis was instantaneous, but since it completely and speedily recovered, it is likely that here also there was only a contusion with hemorrhage. Traumatic facial diplegia is an exceedingly rare condition. Ransohoff has been able to get only four other cases from the literature. All of

the patients recovered. In none of the cases was a decompressive operation indicated in the judgment of the surgeons in charge.

Clinical Study of Nerve Anastomosis.—This paper represents the results of forty-one cases of nerve anastomoses performed in the Mayo Clinic up to Jan. 1, 1917. Cases in which postoperative records are shorter than sixteen months are not included in the report. Nine facial anastomoses were made of 89 per cent. Of the patients heard from, all of whom had improved, the average amount of improvement was 71 per cent., and in this group there were no failures nor indeterminate results, no infections and no deaths. Seven ulnar anastomoses were made. The amount of maximum improvement in the patients who reported was 63 per cent. of the sensory, motor and trophic functions. There were no failures nor indeterminate results, no infections and no deaths. One radial anastomosis was made. No report has been obtained from this patient since he left the clinic. Seven median nerves were repaired. Six (85.7 per cent.) of these patients have been heard from, or have been studied following operation. The average time before maximum improvement was reached was twenty-one months, with 72 per cent. return of the sensory, motor and trophic functions. There was one failure, no indeterminate results, no infections and no deaths. Ten musculospiral anastomoses were done. Nine (90 per cent.) were heard from after operation. The average time before improvement was noticed was twelve months; the average time before maximum improvement was noted was twenty-seven months. The amount of improvement in the patients benefited was 72 per cent. of the sensory, motor and trophic functions. Twenty per cent. only of these patients were improved; in 30 per cent. the results were indeterminate, and in 50 per cent. they were failures. In one case the wound became infected. There were no deaths. Four external popliteal anastomoses were made. The average time before improvement was noticed was eleven months; the average time before maximum improvement was reached was approximately twenty-four months. The average improvement obtained was 43 per cent. return of the sensory, 30 per cent. of the motor, and 80 per cent. of trophic function. In one case the result was a failure (infection) and in another the result was indefinite. Two sciatic nerves were repaired. One of the two patients was heard from following operation; he reported 40 per cent. return of the sensory, motor and trophic functions. One right recurrent laryngeal nerve was anastomosed. Improvement was first noticed twelve months after the operation; maximum improvement—90 per cent. return of the motor function—was reached at the end of thirty-six months. Adson points out that the degree of regeneration depends on (*a*) duration of time between injury and repair, the shorter the period the greater the regeneration. The possibility of regeneration is very slight after three or four years, (*b*) actual loss of nerve tissue, and (*c*) retraction of severed ends. In the technic of nerve repair (*a*) no covering is necessary if the freshened ends can be sutured in close apposition; (*b*) if an intervening gap remains it should be tubulized; preferably by fascia; (*c*) if the gap is longer than 5 cm. tendon transplantation and arthrodesis should be considered instead of nerve anastomosis; (*d*) autogenous transplants may be considered for short gaps, but they are of no greater value than tubulization; (*e*) in all technic, the wound should be free from hemorrhage and infection and the nerve ends should not be trumatized; and (*f*) during the postoperative convalescence, the paralyzed muscles should be massaged and passive motion should be administered.

Unilateral Renal Tuberculosis.—Herman cites a case of primary tuberculosis of the urinary bladder. The patient, a women, aged 30 years, complained of burning on urination and pain in the upper abdomen and back. The cystoscopic examination disclosed the presence of ulcerations typical of tuberculosis. The ureters and kidneys were examined and found negative for tuberculosis.

Operation for Dupuytren's Contracture.—Under general anesthesia, without the use of a tourniquet Gill makes a transverse incision along the distal palmar crease. Through this incision alone a careful dissection is made of the entire palmar fasica to or beyond the crease at the base of the thenar eminence, as far toward the base of the palm as is necessary, and to the web of the fingers. The skin is adherent to the fascia, and the dissection must be made carefully to avoid buttonholing the skin. With proper retraction, as the dissection proceeds, it is found that the entire fascia can be exposed and freed within the limits mentioned. The contractured fascia is then excised without injury to the underlying tendons, vessels and nerves. The tendons do not require lengthening as they do not participate in the contracture. If contractured fascia is present on the palmar aspect of the proximal phalanges, it may be excised through transverse incisions along the crease at the base of each finger involved. If, now, it is found that the proximal interphalangeal joint cannot be extended, or that it can be extended and flexed again only with a snap, the head of the first phalanx must be excised through a transverse dorsal incision over the joint. A small free fat transplant from the thigh is inserted smoothly beneath the palmar skin. It will lie in position without sutures. It is placed here to prevent subsequent adhesion of the skin to the tendons and to reconstruct the normal softness and plumpness of the palm of the hand. The incision is closed with a few interrupted sutures of No. 0 chromicized catgut. The hand is dressed on a well padded splint for a week.

Boston Medical and Surgical Journal

Aug. 21, 1919, **181**, No. 8

*Consecutive or Interrupted Hospital Training for Pupil Nurses. A. Worcester, Waltham, Mass.—p. 221.
Treatment of Early and Doubtful Cases of Cancer. R. B. Greenough, Boston.—p. 224.
*Torsion of Spermatic Cord. H. M. Clute, Boston.—p. 231.
The Nelaton Probe. J. C. Warren, Boston.—p. 235.
Panniculitis. Its Diagnosis and Treatment. F. A. Cummings, Providence.—p. 236.

Consecutive or Interrupted Hospital Training for Pupil Nurses.—Worcester defends the plan of nurses' training adopted by the Waltham Training School for Nurses, which believes that it is an educational advantage to interrupt the hospital training of its pupils by a few months of training in home nursing.

Torsion of Spermatic Cord.—According to Slute the diagnosis of torsion of the spermatic cord should not be difficult. In acute complete torsion of the cord, the onset is very sudden with severe pain in the testis. This pain often radiates along the inguinal canal and may radiate down the thigh or into the pelvis. Vomiting often occurs at the onset, but does not persist. More or less shock and prostration is present at first. Fever does not occur early but one or two degrees may be present later in the course of the condition. The testis is tender soon after the onset. After twelve or eighteen hours the scrotum becomes slightly red-hot, swollen and very tender on the affected side. Edema of the skin was present in two of Clute's cases. The epididymis may be palpated in front of the testis, especially if the case is seen early. In cases seen several days after the onset, the relations of testis and epididymis cannot be defined because of their swelling and the presence of some degree of hydrocele. The spermatic cord in the inguinal canal is neither enlarged nor tender, except near the point of torsion. The prostate and seminal vesicles are negative to rectal examination. In partial torsion of the cord the symptoms are similar but less severe. Recurrent attacks of pain occur in the testis, followed by slight swelling of the scrotum. The pain is often mild and of a relatively short duration. Vomiting and fever are unusual. In any case after detorsion, the symptoms disappear as quickly as they arise. Untreated, the pain, tenderness and swelling persist for many days. The treatment of torsion of the cord depends on whether or not the testis is fully descended and on the duration of the torsion. In any case seen shortly after the onset of the symptoms, detorsion should be attempted. Since the usual direction of the twist is from within outward and forward, the reverse should first be attempted. Increasing pain demands that an attempt to turn the testis in the other

direction be made. If detorsion cannot be done, an operation is necessary. In fully descended testes, an incision is made in the scrotum and the tunica vaginalis opened. An attempt is made to untwist the cord and to restore the circulation to the testis by the application of hot towels. If the case is not seen early, this attempt will fail. Orchidectomy should then be performed. The best treatment for torsion of an undescended testicle is orchidectomy. If, for any reason, this cannot be done, a plastic operation returning the testis to the scrotum, if possible, and at least fixing it to prevent future twists, is indicated.

Colorado Medicine, Denver

August, 1919, **16**, No. 8

Contributions of Colorado Physicians to Medical Literature and Journal of American Medical Association As Index. C. D. Spivak, Denver.—p. 192.

Illinois Medical Journal, Chicago

August, 1919, **36**, No. 2

Relationship of State Department of Public Health and Medical Profession. C. St. C. Drake, Springfield.—p. 57.
Results to Be Expected from a Tonsillectomy or an Adenectomy C. F. Burkhardt, Effingham.—p. 59.
Spinal Anesthesia in General and Genitourinary Surgery. G. F. Thompson and J. S. Nagel, Chicago.—p. 62.
Glance at Some of Old and New Theories on Causation of Cancer. J. R. Pennington, Chicago.—p. 66.
Tuberculin Treatment of Tuberculosis in Children. E. Lackner. Chicago.—p. 76.
Selection of a Practical Method of Blood Transfusion. K. F. Snyder, Freeport.—p. 81.
Little Journey to Home of John Hunter. W. E. Shastid, Pittsfield. —p. 84.

Journal of Abnormal Psychology, Boston

February, 1919, **13**, No. 6

What Is the Problem of Stuttering? M. G. Blanton and S. Blanton. —p. 303.
*Are the Present Psychologic Scales Reliable for Examination of Adults? An Analytical Comparison of Examinations for Children and for Adults. S. L. Pressey and L. W. Cole, Boston.—p. 314.
Psychologic Analysis and Reeducation. M. J. Hamilton.—p. 324.

Present Psychologic Scales.—Pressey and Cole report the study of the psychologic examination of fifty normal children and 110 feebleminded children and 115 adults of feebleminded grade, all grading on the scale between the ages of 8 and 12. The major purpose was to determine the applicability of the present psychologic scales to work with adult individuals. In connection with this a comparison of normal and feebleminded children was made to obtain some evidence as to the distinctive features of the defective mentality. Individuals more than 20 years of age show a definitely greater irregularity on a psychologic scale than do normal or feebleminded children. Feebleminded children are not distinguished from normal children by greater irregularity. The feebleminded show an examination of a makeup different from that given by normal children. In general, the mentally defective show a better sensorimotor ability than normal children of the same mental age, but a smaller number of ideas and a poorer ability for the recombination and use in a new situation. Adult individuals again give a result distinctly different. The strikingly different makeup of the examination given by the adult individual is used as an argument, (*a*) for the use of the "intelligence quotient" or "coefficient of intelligence" as a form of expression for the results of the psychologic examination and (*b*) for the development of methods and tests especially adapted for use with adults.

Journal of Industrial Hygiene, New York

August, 1919, **1**, No. 4

Factory Inspection and Factory Inspectors. G. M. Price, New York. —p. 165.
Hernia in Industry. C. A. Lauffer, East Pittsburgh, Pa.—p. 177.
Chronic Manganese Poisoning. D. L. Edsall, E. P. Wilbur and C. K. Drinker, Boston.—p. 183.
Public Health Nursing and Industrial Hygiene. M. Beard, Boston.—p. 194.
Industrial Poisoning by Compounds of Aromatic Series. A. Hamilton, Boston.—p. 200.

Journal of Laboratory and Clinical Medicine, St. Louis

August, 1919, **4**, No. 11

Communicable Disease in U. S. Army During Summer and Autumn of 1918. V. C. Vaughan, Ann Arbor, Mich., and G. T. Palmer, Springfield, Ill.—p. 647.
Rôle of Pathologist in Practice of Medicine. W. C. MacCarty and A. C. Broders, Rochester, Minn.—p. 687.
*Lethargic Encephalitis. C. M. Stafford, Detroit.—p. 691.
Combination Tambour and Membranemanometer and Modified Spring Manometer. D. E. Jackson, Cincinnati.—p. 695.
Experiences in Purchase of Basic Fuchsin. F. L. Mickle and M. B. Sherwood, New Haven, Conn.—p. 698.
Method for Making Glass Arterial Cannulea. J. A. Higgins, Chicago. —p. 700.

Lethargic Encephalitis.—The highly interesting point in relation to the case cited by Stafford is in regard to the bacteriologic findings of the specimens of spinal fluid. A smear of the centrifugalized sediment of the first puncture showed, in addition to lymphocytes, a number of rather large diplococci. Cultures were made on ascitic agar, Loeffler's medium, blood agar, and in ascitic broth, but with negative results. The fluid from the second spinal puncture also showed, under the microscope, this same diplococcus, but cultural attempts in these same aforementioned mediums were likewise negative. In an endeavor to secure a culture at any cost, both the first and second specimens of spinal fluid were placed in the incubator overnight at 37.5 C. The following morning numerous minute flocculi were observed throughout both tubes. They were placed in the centrifuge and thrown down. By inoculating ascitic agar slants with this centrifugalized sediment a sparse growth was obtained, which increased as it was transplanted repeatedly. The organism grows rather poorly on plain agar. The colonies on this medium resemble streptococcus colonies, except that they are more delicate and slightly smaller. The organism is a gram-positive diplococcus, frequently occurring in short chains of three or four loosely joined cocci. It stains, but rather poorly, with all common laboratory dyes, some organisms being deeply stained and others slightly. It produces no capsule. In smears from forty-eight hour cultures, it was observed that the chains show a tendency to divide longitudinally, i. e., a distinct and continuous cleavage can be noted, extending throughout the length of the short chain of cocci. This probably accounts for the clusters of organisms, resembling staphylococci, which are commonly encountered in smears from older cultures. Growth on blood agar plates did not produce any hemolized areas or greenish zones. The inoculation of a guinea-pig intracardially with one half the growth on an ascitic agar slant failed to produce any ill effects. A rabbit, inoculated intravenously with two large doses, seven days apart, the first consisting of the growth of one ascitic agar slant suspended in physiologic sodium chlorid solution and the second, the suspended growth of three agar slants, apparently developed no illness, but the presence of agglutinins was demonstrated. Another rabbit inoculated intraspinally with the growth from an ascitic agar tube suspended in physiologic sodium chlorid solution showed no ill effects.

Journal of Orthopedic Surgery, Lincoln, Neb.

August, 1919, **1**, No. 8

Traumatic Genu Valgum: Fracture of Patella. E. M. Little. London, Eng.—p. 457.
Loop Operation for Paralytic Equino Valgus; Principles of Operative Treatment of Paralytic Deformities of Foot. R. Whitman, New York.—p. 459.
Ambulatory Treatment of Fracture of Neck of Femur. E. H. Bradford, Boston.—p. 465.
Fracture Dislocation of Head of Right Humerus. C. F. Painter, Boston.—p. 469.
Chronic Septic Inflammation in Bone Following Gunshot Wound. W. E. Gallie.—p. 470.
Osteochondritis of Hip. P. W. Roberts, New York.—p. 493.

Medical Record, New York

Aug. 23, 1919, **96**, No. 8

Clinical Value of Preliminary Study in Renal Surgery. A. G. Rytina, Baltimore.—p. 311.
Cripples of a Community. Survey of Disabled Children and Adults in Cleveland, Ohio. D. C. McMurtrie, New York.—p. 314.

Cases of Heart Failure. B. Robinson, New York.—p. 317.
Moon and Insanity. E. H. P. Ward, White Plains, N. Y.—p. 318.
Physiopsychic Cure of a Drug Habitué. J. C. Densten, Scranton, Pa. —p. 320.
Case of Acute Gangrenous Pancreatitis. M. D. Bloomfield, Philadelphia.—p. 322.
Pseudarthroses of Humerus Consecutive to War Wounds. C. Dujarier, Paris.—p. 323.

Military Surgeon, Washington, D. C.

August, 1919, **45**, No. 2

Report on Intensive Antityphoid Campaign in Southwestern Germany, Analysis of Data on Typhoid Carriers at Trier, Germany. P. A. Schule, U. S. Army.—p. 127. To be Cont'd.
Vital Statistics in Their Military Relations. A. L. Benedict, U. S. Army.—p. 138.
Problem of Hospital Organization: Coordination of General Surgery and Surgical Specialties. A. D. Bevan, Chicago.—p. 150.
Serum Treatment of Epidemic Cerebrospinal Meningitis, at Camp Devens. A. H. Terry, Jr., A. E. F., U. S. Army.—p. 160.
Method of Handling Venereal Disease at Camp Dix. C. H. D. Shivers, U. S. Army.—p. 167.
Present Surgical Problems in U. S. Army Hospitals. H. W. Orr, Lincoln, Neb.—p. 176.
Measles at Camp Zachary Taylor, Kentucky, Summer of 1917 to Winter of 1919. H. Fox, Camp Zachary Taylor, Louisville.—p. 185.
War Dermatology in France and Preventive Measures Taken. F. C. Knowles, U. S. Army.—p. 200.

New Jersey Medical Society Journal, Orange

August, 1919, **16**, No. 8

Gonococemia and Metastatic Gonorrhea. H. L. Goldstein, Camden, N. J.—p. 261.

New York Medical Journal

Aug. 23, 1919, **110**, No. 8

Treatment of Acute Diseases of Biliary Passages and their Complications. J. B. Deaver, Philadelphia.—p. 309.
Severe and Uncontrollable Hemorrhage Following Mastoidectomy in a Patient Suffering from Purpura. T. J. Harris, New York.—p. 311.
Medical Surprises in Italy. C. U. Moore, Portland, Ore.—p. 314.
*Influenzal Pneumonia at Camp Greene, N. C. C. P. Brown, Philadelphia, and F. W. Palfrey, Boston.—p. 316.
Preventive Gynecology. A. B. Leeds, Chickasha, Okla.—p. 321.
Common Skin Disease Frequently Seen in School Children. S. D. Hubbard, New York.—p. 322.
Destructive Action of Neosalvarsan on Leukocytes in Acute Lymphatic Leukemia. H. Lowenburg, Philadelphia.—p. 326.
Necessity for Early Amputation. H. Brachet, Bordeaux, France. —p. 327.

Antipneumococcus Serum in Influenzal Pneumonia.—Polyvalent antipneumococcic serum was administered at Camp Greene in 158 cases of pneumonia, the cases being selected according to two principles. In all Type I cases the patients received serum unless from their condition when type determination was heard from it was judged that the patient could be expected to recover without serum. In certain severe cases where there was danger of an unfavorable outcome, Brown and Palfrey considered themselves justified in giving the patients the benefit of the possibility of improvement by serum treatment without waiting for type determination. Of the pure Type I cases, there were 113, and twelve men died, a mortality of 10.6 per cent. Of the total cases where pneumococcus Type I was present either alone or associated with another type, there were 133 cases and thirteen deaths, a mortality of 9.7 per cent. Serum was given in doses of from 100 to 150 c.c., intravenously, repeating at eight, twelve and sometimes twenty-four hour intervals according to response on the part of the patient. In certain cases one dose seemed to be sufficient to turn the tide toward recovery; other cases required one or more repetitions. The largest amount given in any single case was 600 c.c.; however, the average amount given was 300 c.c. The possibility is at least suggested that the nonspecific foreign protein reaction may serve to some extent to stimulate reaction against infection.

New York State Journal of Medicine

August, 1919, **19**, No. 8

*Physiology and Pathology of Endometrium. L. W. Strong, New York. —p. 289.
*Distribution of Adenomyomata Containing Uterine Mucosa. T. S. Cullen, Baltimore.—p. 295.
*Obstetric Surgery. E. P. Davis, Philadelphia.—p. 299.
*Clinical Study in Preoperative and Postoperativa Blood Pressure and Their Relation to Renal Function and in Shock and Hemorrhage. J. O. Polak, Brooklyn.—p. 303.
*Corpus Luteum Extract in Vomiting of Pregnancy with Report of Cases. J. K. Quigley, Rochester.—p. 306.
Report of Two Cases of Nasal Sinus Suppuration in Relation to Mastoidectomy. H. B. Blackwell, New York.—p. 307.
Surgery at Evacuation Hospitals. C. H. Peck, New York.—p. 309.
Policy and Program of Physical Reconstruction of Disabled Soldiers of U. S. Army. F. Billings, Chicago.—p. 311.

NOTE.—The articles by Drs. Strong, Cullen, Davis, Polak and Quigley are also published in the *American Journal of Obstetrics* **80**:113; 122; 130; 139; 183 (Aug.) 1919.

Psychobiology, Baltimore

January, 1918, **1**, No. 4

Classification of Groups. C. W. Bock.—p. 277.
Synchronous Motor Kymograph. K. Dunlap, Baltimore.—p. 319.
Dunlap's Method for Mean Variation. B. Johnston.—p. 325.
*Action of Some Antipyretic Analgesics on Psychologic Reaction Time. D. I. Macht, S. Isaacs and J. Greenberg, Baltimore.—p. 327.

Action of Antipyretic Analgesics on Psychologic Reaction Time.—A careful study and analysis of all the data obtained has led Macht and his associates to the following conclusions: The results obtained with antipyretics are quite different from those found after morphin or opium. No primary stage of stimulation or shortened reaction time was noted after administration of antipyretics, except possibly after small doses of quinin. It was found that in all cases the ordinary doses of antipyretics produced either very little effect on the reaction time, or if affecting it at all, they always impaired it as indicated by the prolongation of the mean readings, by the increase in the mean variations of readings, or by both. The most powerful or depressant drug in this respect was found to be pyramidon. It was furthermore interesting to note that when the antipyretics exerted an influence on the reaction time, the simple reflexes or reactions to sound, light and touch were more prolonged or impaired than the more complex association tests. Of the three simple reactions that of touch was more generally retarded than that of sound or light. The association tests were also depressed or impaired, but usually in a distinctly lesser degree than the simple reactions or reflexes. Experiments with combinations of the various antipyretics gave results which could be explained by a simple summation or addition of the individual effects of the components. No so-called synergism or potentiation of one drug by another was observed. The curious difference in the effect of the drugs on the simple reactions as compared with that on the more complex ones is the direct opposite of the results obtained after administration of opium or morphin. In the latter case, the simple reactions were always less impaired than the more complex association tests. A comparison of the findings obtained with the two groups of analgesics, the opiates or narcotics, and the antipyretic analgesics, seems to point to some lower synapse as the seat of action of the coal tar derivatives.

Southern Medical Journal, Birmingham

July, 1919, **12**, No. 7

Osler and the South. L. F. Barker, Baltimore.—p. 345.
Tribute to Sir William Osler. H. A. Kelly, Baltimore.—p. 346.
*Angioneurotic Edema: A Preliminary Report. C. R. Austrian, Baltimore.—p. 348.
Chronic Nephritis and Gout. H. A. Christian, Boston.—p. 353.
Mechanism of Natural and Acquired Immunity to Pneumococcus in Man. P. W. Clough, Baltimore.—p. 360.
Therapeutic Study of Benzyl Benzoate in Bronchial Spasm or Asthma. D. I. Macht, Baltimore.—p. 367.
Intensive Arsphenamin Therapy. H. H. Hazen, Washington, D. C. —p. 371.
Introduction to Preliminary Course in Physical Diagnosis. W. S. Thayer, Baltimore.—p. 374.
*Acute Pancreatitis (Pancreatic Necrosis). J. C. Bloodgood, Baltimore. —p. 382.
Stricture and Calculus of Ureter from Diagnostic Viewpoint. G. L. Hunner, Baltimore.—p. 396.
Significance of Urogenital Disorders in General Diagnostic Study of Women. E. H. Richardson, Baltimore.—p. 403.
Case of Keratitis Profunda (or Disiformis?) with Microscopic Examination. F. H. Verhoeff, Boston.—p. 409.
Robert Pencil, a Pediatrist of the Protectorate. J. Ruhräh. Baltimore. —p. 416.

Angioneurotic Edema.—Austrian emphasizes that angioneurotic edema is a symptom and not a disease, and to show that in those cases in which the immediate cause of this manifestation can be discovered and removed, the symptom can be relieved. In one case the symptoms were the result of sensitiveness to ham; another patient reacted to white beans, another to fish, another to veal, and a fourth to strawberries.

Acute Pancreatitis.—Bloodgood adds two cases to nine others seen by him during the past twenty-five years. He is convinced that drainage of the lesser peritoneal cavity through the gastrocolic omentum meets the indications more than any other suggested treatment. The best method of examining the pancreas, if one does not wish to go through the gastrocolic omentum and fat without more evident signs, is to withdraw the omentum and colon and inspect and palpate the pancreas through the mesocolon.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

August, 1919, **27**, No. 8

Transplantation of Vermiform Appendix into Female Bladder to Supply an Absent Urethra. C. M. Rosser, Dallas, Texas.—p. 165.
Preparation and Use of Surgical Solution of Chlorinated Soda. M. Smith, Oklahoma City.—p. 167.
Technic of Arsphenamin Administration. O. L. Suggett, St. Louis.—p. 170.
Appendicitis Complicating Pregnancy. A. P. Heineck, Chicago.—p. 172.

Virginia Medical Monthly, Richmond

July, 1919, **45**, No. 4

Nervous and Psychic Effects of Influenza. J. A. Hodges, Richmond.—p. 77.
Appendicitis with Abscess and Diffuse Peritonitis. Results of Operation in 100 Cases. G. P. LaRoque, Richmond.—p. 82.
Fosinophilia. R. S. Preston, Richmond.—p. 85.
Digestive Disturbances from a Diagnostic Standpoint. D. L. Harrell, Suffolk, Va.—p. 89.
Report of Pompholyx and Erythema Nodosum. T. W. Murrell, Richmond.—p. 91.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Aug. 2, 1919, **2**, No. 3057

Growth of Surgery of Front in France. A. Bowlby.—p. 127.
Abdominothoracic Wounds of Warfare. G. Taylor.—p. 131.
*Acute Diverticulitis of Transverse Colon: Resection of Bowel; Recovery. H. F. Vellacott.—p. 134.
Inguinal Route for Radical Cure of Obturator Hernia. E. T. C. Milligan.—p. 134.
Perforated Duodenal Ulcer in Man of 83: Operation: Recovery. H. H. Brown.—p. 135.

Acute Diverticulits of Transverse Colon.—In the case reported by Vellacott the patient, a woman, aged 36 years, had been subject to attacks of pain in the upper abdomen for about eighteen months. This pain was severe at times, but had no relation to food though she had to be careful what she ate. On the day of admission she "had had indigestion all day," which developed into acute pain quite suddenly about 5 p. m. Vomiting and the signs of acute appendicitis were all present except that the maximum tenderness and rigidity were situated to the right of and close to the umbilicus, nevertheless the diagnosis of appendicitis was made. At operation considerable free fluid was present in the abdomen with a faint smell of *B. coli*. The appendix was seen to have been the seat of former disease, but was obviously not the cause of the present attack. Adherent to the transverse colon, lying in relation to the second part of the duodenum, was a small amount of "lymph" and a mass the size of a large walnut was felt in its upper and posterior wall. The omentum was wrapped round this. From the mass a thick band passed up into the transverse mesocolon toward the central group of lymph glands. This band and the mass in the bowel were so hard that Vellacott diagnosed malignant disease with perforation and decided to resect. About 6 inches of the gut were accordingly resected and an end-to-end union made. On examining the part removed Vellacott could find no trace of malignant disease in the lumen of the gut, but on the upper posterior wall was a small opening, an eighth of an inch wide, leading to a cavity in the hard mass. This cavity was a little more than a quarter of an inch in diameter and was filled by a concretion which could be seen from the lumen of the gut. A perforation had taken place from the diverticulum forward into the general peritoneal cavity in front of the transverse mesocolon. The case is of interest as occurring in the transverse colon and at the early age of 36.

Indian Journal of Medical Research, Calcutta

April, 1919, **6**, No. 4

Seasonal Variation in Reaction and Hardness of River Water in India. W. C. Ross and K. N. Bagchi.—p. 423.
Influence of Alkalinity of Natural Waters on Their Turbidity. V. G. Raju.—p. 430.
*Dose of Aluminum Sulphate for Clarification of Turbid River Waters of Bengal. V. G. Raju.—p. 440.
Investigation into Breeding Places of Phlebotomus (Papatasi and Minutus) in Lahore. J. L. Mitter.—p. 452.
Study of Endamœba Coli. F. W. Cragg.—p. 462.
*Sugar of Blood and Sugar in Urine in Varying Conditions of Health in Bengali. I and II. D. McCay, S. C. Banerjee, L. M. Ghosal, M. M. Dutta and C. Ray.—p. 485; p. 508.
*Pathogenesis of Deficiency Disease. II. Effects of Deprivation of 'B' Accessory Food Factors. R. McCarrison.—p. 550.
Involution of Thymus in Birds. R. McCarrison.—p. 557.
Preparation of a Purified Agar Powder with Increased Powers of Filtration. J. Cunningham.—p. 560.
Preparation of Culture Media Suitable for Growth of Organisms Used in Vaccines. D. Norris.—p. 569.
*A Rapid Method of Producing Hemolytic Serum Against Human, Sheep, and Goat Erythrocytes. K. R. K. Iyengar.—p. 585.
*Mycotic Affections of Throat Due to Endomyces Tropicalis. H. W. Acton.—p. 591.
Incidence and Importance of Intestinal Entozoa Among Indian Members of Mesopotamian Expeditionary Force. H. W. Acton.—p. 601.
*Theory of Invasion by Infective Agents. A. G. McKendrick.—p. 614.
Pneumocatarrhal Diathesis; Prevention and Treatment of Pneumonia and other Respiratory Infections By Mixed Vaccines. J. P. Johnson.—p. 633.

Clarification of Turbid River Waters with Alum.—The main conclusions reached by Raju as a result of his observations are that with increasing doses of alum there is a progressive improvement in the color and transparency of turbid water until the point of perfect clarification is reached. In no case was any evidence obtained of a negative phase or a retardation of settlement with overdoses of alum; and in no case was any evidence obtained of the existence of a positive association between the alkalinity and the dose of alum required. All the waters examined had, however, sufficient amount of carbonates to react with at least seven or eight parts of aluminum sulphate per hundred thousand.

Sugar of Blood and Urine.—McCay found that the threshold stimulus of the kidney for sugar excretion varies widely in different individuals and in the same indivdual under different circumstances. Glycosurics are met with in whom (1) the threshold is high, usually the condition seen in the fat. Overfed classes: (2) the threshold is low, as in (*a*) the latter stages of (1); (*b*) those who have lost the power of storing, oxidizing and converting sugar into fat; (*c*) those who present an excessive permeability of the kidney to sugar as a result of oxaluria, gout, stone. The limits of the normal variations of the sugar of the urine of Bengalis are from 0.015 per cent. to 15 per cent., the average being 0.065 per cent. No parellelism or arithmetic proportions exist between the concentration of the sugar of the blood and that of the urine in any of the following conditions: (1) normal health; (2) a glycosuric diabetes; (3) varying degrees of glycosuria in different individuals; (4) varying degrees of glycosuria in the same individual. The ingestion of glucose is always followed by an increase in the sugar of the urine, whether the concentration of the sugar of the blood increases or not, *i. e.*, in the healthy potential diabetics and diabetics. Kidney disease may prevent glycosuria even when very marked hyperglycemia is present, up to 36 per cent. Hyperglycemia occurred in one of McCay's cases without glycosuria.

Evidence is also given by McCay to show that excessive carbohydrate diet, besides tending to decrease the oxidizing power of the tissues in a direct manner, acts also indirectly by lessening the secretion of the hydrochloric acid of the gastric juice. This leads to fermentative dyspepsia, gastro-intestinal catarrh and probably pancreatitis. Whether it be a functional derangement or an atrophy following on chronic inflammatory changes, the pancreatic activity becomes depressed, and, accepting the dextrose amboceptor theory, the oxidzing power of the tissues becomes lowered. The potential glycosuric in this way quickly comes under the influence of the ill effects of carbohydrate overfeeding, and hyperglycemia and glysuria are rapidly established.

Pathogenesis of Deficiency Disease.—The experimental studies made by McCarrison showed that the morbid state which results in pigeons from deprivation of accessory food factors of the "B" class resembles closely that resulting from complete vitaminic starvation, but is much less often associated with edema. There appears to exist in unmilled rice, as well as in butter or onions, or both, some factor which tends to prevent the onset of edema. Two food factors appear to be concerned in the production of avian beriberi: (*a*) the so-called antineuritis factor, and (*b*) the antiedema factor. The brain, the suprarenals and the pituitary gland are very sensitive to vitaminic influence in the food.

Rapid Hemolytic Serum Production.—By the use of graded strengths of erythrocyte suspension, from 5 to 30 per cent., a saving in the mortality of rabbits used for the production of hemolytic serum by intravenous injection is effected over other methods in which higher concentrations are used. The use of these concentrations in the method described by Iyengar gives a resulting serum of titer from 1:3,000 up to 1:7,000, which were higher titers than were obtained by other methods used. The titers obtainable with different antigens varied markedly. Thus sheep erythrocytes gave much higher titers than goat erythrocytes. The injection of human erythrocytes likewise did not give rise to so potent a serum as the injection of sheep erythrocytes.

Mycotic Affections of Throat in Tropics.—There is a mycotic affection of the throat seen in the tropics due to an andomyces. It is described in detail by Acton. This endomyces differs from the albus in growth, culture mediums required and its effect on the various sugars. Acton has, therefore, provisionally named it "tropicalis." The disease can be reproduced by smearing the culture on the back of the throat. The fungus causes a pharyngitis and in debilitated individuals may extend to the bronchi and set up a fatal bronchopneumonia. It may also infect old tuberculous and bronchiectatic cavities. A 2 per cent. solution of liquor formaldehydi swabbed over the back of the throat will cure the pharyngitis in twenty-four hours.

Theory of Invasion by Infective Agents.—The considerations regarding the formation of antibodies are summed up by McKendrick as follows: The introduction of organisms (or their products) into the body system causes an acceleration in the rate of production of antibodies. It is reasonable to assume that the degree of response is proportional to the logarithm of the stimulus and to the tissue reactivity. The stimulating power of an organism (or its products) probably depends on its degree of saturation (sensitisation). These are the hypotheses whose complex forms the theory which McKendrick proposes to adopt. Any disturbance of this relationship, a retardation or acceleration of one sort or another leads to various clinical pictures. For full details the original article should be consulted. A system of classification of diseases due to organismal invasion on the basis of the balance between the protective agencies of the host, on the one hand, and influences acting in a contrary manner on the other, has emerged. This system expresses itself in graded variations in the character of the course and termination of the disease. The main clinical types of disease fall thus into a broken series. Pneumonia, with its critical recovery, stands at the one extreme where protective efforts are in excess. Malta fever, with its succession of relapses, lies very near to the neutral point where the balance is exact. Passing through diseases of the typhoid group, there is at the other extreme the chronic infection, in which protective efforts are dissipated and wasted. Finally, from a consideration of curves of temperature a method has emerged which McKendrick says may prove to be of considerable value in the prognosis of diseases in general. He is convinced that his mathematical equations, arrived at from however imperfect assumptions, appear to be sufficient to account for the more striking manifestations of organismal infections and to be worthy of acceptance as a working hypothesis.

Japan Medical World, Tokyo

July 20, 1919, No. 292

Experimental Study of Life History of Sparganum mansoni Cobbold. T. Okumura. To be continued.

Lancet, London

Aug. 2, 1919, 2, No. 5005

Roentgen-Ray Therapy. R. Knox.—p. 183.
*An Infection in Mesopotamia Due to a Bacillus of the Gaertner Paratyphoid Group. W. MacAdam.—p. 189.
*Commotional Factor in Etiology of Shell Shock. A. Carver.—p. 193.
Intracranial Lesions. R. E. Smith.—p. 196.
*Colectomy. J. Taylor.—p. 197.
*Aneurysm of Heart without Symptoms. C. Wilson.—p. 199.
Flavine in Treatment of Comminuted Fractures of Jaws and Acute Septic Stomatitis. H. W. Turner.—p. 200.
Use of Bismuth and Iodoform (Bipp) In Treatment of Chronic Suppurative Otitis Media. F. Stoker.—p. 200.
*Duplication in Human Spermatozoa. S. R. Tattersall.—p. 201.
Case of Smallpox Simulating Acute Appendicitis. J. K. Haworth.—p. 201.

Bacillus of Gaertner Paratyphoid Group.—A series of inagglutinable organisms culturally and morphologically indistinguishable from paratyphoid were isolated from the blood stream by MacAdam in Bagdad between July and December, 1918, and similar findings have been recorded in a number of cases in other areas of Mesopotamia. The several strains of the organism all have the cultural and morphologic characters of the Gaertner paratyphoid group organisms. It is most closely related to *Bacillus paratyphosus* B and it does not appear to belong to the *B. aertycke* type. Up to the present the organism has been obtained from nine cases, from seven of which it was isolated during routine blood culture investigation of "P. U. O's." In the remaining two cases it was isolated at necropsy from the lungs and spleen, no blood culture having been made during life. The organism has so far not been isolated from the urine or stools in spite of numerous examinations, but at one of the necropsies it was obtained in pure culture from the bile. All the strains give similar microscopic appearances—an actively motile, short, stout gram-negative bacillus or coccobacillus, with some tendency to pleomorphic formation. The growth on agar is less transparent and oily in appearance than the usual paratyphoid cultures, and is usually more profuse. There is no liquefaction of gelatin. On MacConkey's medium the colonies are indistinguishable from the paratyphoids. Biochemically the organism produces acid and gas in mannite, glucose, dulcite, maltose, galactose and arabinose, no change occurring in lactose, saccharose and inulin. Litmus milk becomes at first slightly acid, changing to alkalinity on the fifth, sixth or seventh day; there is no production of indol. On isolation all the strains were inagglutinable even in low dilutions of the high titer serum for *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B and *B. enteritidis* (Gaertner). After eight subculturings in broth spread over a fortnight, all the strains had become agglutinable to *B. paratyphosus* B serum in dilutions of 200 and 250; while in the case of four of the strains, each of which was subcultured on thirty occasions, agglutination was obtained in considerably higher serum solutions. Specific serum for three of the strains have been obtained by the immunization of rabbits, a titer of from 6,000 to 10,000 being reached without any difficulty. Of three patients suffering from the infection who died, two were clinically regarded as having lobar pneumonia. At necropsy the same coccobacillus was isolated from the lungs and spleen and in one instance from the gallbladder also. Respiratory symptoms were a prominent feature of most of the cases, while

the symptomatology and course of the fever were usually not suggestive of an enteric group infection. The real identity of the organism is so far undecided.

Commotional Factor in Etiology of Shell Shock.—Experiments were made by Carver on fish, rats and mice, using various kinds of explosives in varying quantities and at varying distances, to determine the existence of commotional and emotional syndromes. Carver tried to outline a picture of the early syndrome which distinguishes the more severe cases of commotional shock, but the symptoms in slighter cases become almost inextricably blended with others which appear identical with those resulting from emotional shock. Hence, Carver concludes that while one may at the two extremes deduce with each the nature of the primary pathogenic factor from a study of the syndrome exhibited, this becomes increasingly difficult as one approaches the intermediate members of the series, and one's judgment is largely determined by the aspect from which one approaches the problem.

Colectomy.—Taylor is an advocate of colectomy in appropriate cases. He has performed the operation six times with excellent results. The rapid improvement in general health was striking; there was no trouble with diarrhea, the bowels only moving about twice a day. Attempts to relieve patients by partial operations were not very successful.

Aneurysm of Heart Without Symptoms.—Wilson's patient was 60 years of age. She had never been ill or an invalid. She died suddenly while attempting to vomit after having had what was believed to be a "stomach" attack for about twelve hours. At the necropsy attention was immediately centered on the bulging pericardium. On puncturing it blood gushed out, and the sac was found to be full of blood, partly liquid and partly clotted. The heart itself was small and the walls rather thin and pale. On the surface of the left ventricle, about an inch above the apex, was a dark circular patch rather smaller than a shilling with a small rent in the center. On section, the patch proved to be a collapsed aneurysmal dilatation; the central portion, where the rupture had taken place, was hardly thicker than brown paper. In other respects the heart appeared normal.

Duplication in Human Spermatozoa.—Tattersall's patient was a man, 25 years of age, suffering from spermatorrhea. The greater number of spermatozoa were normal, but in a few instances one head was furnished with two distinct tails. The tails were quite separate and distinct as far forward as the posterior end of the middle part, with which they join. The proportion of two tailed to normal sperms was about 1:750. A second type of abnormality was also observed. One or two spermatozoa were furnished with two heads and one tail. No abnormality was found in the sexual history of the man's family. There has not been a marked preponderance of one sex among the children born, nor has there been an instance of twins or abnormal children for two generations back.

Seale Hayne Neurological Studies, London

April, 1919, **1**, No. 4

Hysterical Anesthesia; Hysterical Element in Symptoms Arising from Injuries to Peripheral Nerves. A. F. Hurst and S. H. Wilkinson.—p. 171.
Treatment of Insomnia and War Dreams. R. G. Gordon.—p. 185.
*Concussion and So-Called Shell Shock Headache. A. F. Hurst and C. H. Ripman.—p. 193.
*Hysterical Trismus and Other Neuroses of Jaw. S. H. Wilkinson.—p. 196.
Paralysis of Left Half of Tongue Following Gunshot Wound. A. Robin.—p. 202.
Postural Length and Postural Tone in Hysterical and Other Deformities. A. F. Hurst.—p. 203.
Postural Tone of Rectum, with Special Reference to Dyschezia (Rectal Constipation). A. F. Hurst.—p. 208.
Case of Hysteric Idioglossia in a Soldier. C. H. Ripman.—p. 217.
Mental Attitude of Pensioner. A. Robin.—p. 222.
Hysterical Complications of "Rheumatism." R. G. Gordon.—p. 228.

Concussion and So-Called Shell Shock Headache.—The authors suggest that the explanation of the long continued and intractable headache coming on after the concussion caused by a high explosive shell is due to the perpetuation by autosuggestion of a headache which is at first organic in origin and a genuine result of concussion. Being produced by suggestion and cured by psychotherapy, it can be correctly called hysterical. While not every case of prolonged headache following concussion is of this nature, the authors have seen several cases in which psychotherapy was extremely effective after all other methods had failed. It is further suggested that the chronic headache which follows concussion in civil life is probably often of similarly hysterical origin.

Hysterical Trismus and Other Neuroses of Jaw.—Cases are cited by Wilkinson to show that heterosuggestion plays a prominent part in the development of hysterical trismus.

Sei-I-Kwai Medical Journal, Tokyo

May 10, 1919, **38**, No. 5

Einhorn's Duodenum Bucket. Mishikawa.—p. 19.

Siamese Red Cross Medical Journal, Bangkok

April, 1919, **2**, Part 1

Plague in Bangkok City. H. C. Highet.

Archives de Médecine des Enfants, Paris

July, 1919, **22**, No. 7

*Inherited Syphilis and Lessened Resistance. V. Hutinel.—p. 337.
Institutional Tuberculosis in Two Infants. P. Nobécourt and J. Paraf.—p. 355.
*Syphilitic Ulcer of Umbilicus in Infant. Id.—p. 362.
Galloping Lymphosarcoma in Girl of 12. M. Lasalle.—p. 368.
Asthma in Children. J. Comby.—p. 372.

Inherited Syphilis and Points of Lesser Resistance.—Hutinel explains in detail how the taint of syphilis inherited possibly through several generations may render certain organs, glands, bones or other tissues points of lesser resistance. Their development may not be quite finished, and any intercurrent infection localizes by preference at these points of lesser resistance and may persist interminably. Chorea, for example, is exceptionally frequent among children with inherited syphilis. This taint also throws light on the chronic course of nephritis, and as a factor in rachitis it is far from negligible. By thus enlarging the field of syphilis, he offers a prospect of more effectual therapeutics in all these abnormal conditions. Treatment for the inherited syphilis may eliminate this factor more or less completely. He reports encouraging results in abnormal or severe rachitis, anemias, interminable nephritis, cirrhosis of the liver, etc., and warns that the progenitor responsible for the taint may be more than one generation back.

Syphilitic Ulceration of the Umbilicus.—The ulceration at the umbilicus of the month-old babe was unmistakably syphilitic, and seemed to be the only appreciable manifestation of the inherited disease.

Archives de Médecine et de Pharm. Militaires, Paris

January, 1919, **71**, No. 1

Treatment of Pseudarthrosis of the Humerus. C. Dujarier.—p. 1.
Primary Treatment of Fractures and Wounds of Joints. Bréchot.—p. 43.
Research on Sterilization of Dressings, Instruments, Gloves, Etc., in War Surgery. E. Rousseau.—p. 69.

Bulletin de l'Académie de Médecine, Paris

July 1, 1919, **82**, No. 26

*Gas Cysts in Abdomen. Tuffier and Letulle.—p. 5.
Preparation of Dry Vaccine. R. Wurtz and L. Camus.—p. 12.
Operative Treatment of Acute Appendicitis. Témoin.—p. 16.
Correction without Scar of Disfiguring Noses. J. Bourguet.—p. 24.
Operative Treatment of Chronic Intestinal Stasis. V. Pauchet.—p. 27.
*Recalcification by Food. Berthier.—p. 29.
*Milk in Diabetes. P. Le Noir.—p. 31.
Nervous Symptoms after Parachute Descents. G. Ferry.—p. 33.

Gas Cysts in Abdomen.—Tuffier and Letulle report a case of fatal stenosis of the small intestine from the effects of thousands of minute gas cysts in the abdomen. In a second case all the abdominal symptoms subsided after gastroenterostomy. They have found sixty-four analogous cases of encysted pneumatosis on record.

Bone as a Food.—Bertner refers to veal or chicken spongiosa bone cooked in a soup and eaten. Every one, he

says, is surprised to find how it can be chewed and how palatable it is. The teeth profit by the mineral salts, and the whole system gains, especially when tuberculosis impends.

Restriction to Milk in Diabetes.—Le Noir thinks that antidiabetic diet is liable in time to have untoward by-effects in persons predisposed to arteriosclerosis, gout, etc., and hence that an occasional change to a milk diet is beneficial. Consequently he orders for an occasional five day period restriction to 2 or 3 liters of milk taken at brief intervals during the day. In 80 per cent. of his seventeen cases marked improvement was realized. In four of the cases the sugar disappeared from the urine after the first course of milk; in nine others it dropped by two thirds or a half after each course.

July 8, 1919, **82**, No. 27

*Forceps in Small Intestine for Twelve Years. S. Mercadé.—p. 39.
*Sanatoriums in Combating Tuberculosis. Armaingaud.—p. 41.
Vaccination of Herbivora against Rabies by Means of Etherized Virus. P. Remlinger.—p. 47.
Comparative Physiopathology and Cytology of Saliva from Submaxillary and Parotid Glands in Mumps. De la Prade and Loiret.—p. 49.
Tuberculosis in Postal Service. Beaufumé.—p. 51.
*Operative Treatment of Severe Hematemesis. M. Cazin.—p. 53.

Forceps in Small Intestine for Twelve Years.—The woman of 63 had had more or less digestive disturbance for a number of years, and Mercadé was operating on account of aggravation of the condition when he discovered casually in the small intestine a hemostatic forceps. A herniotomy had been done twelve years before, and before this a gynecologic operation. The forceps had not been able to pass the ileocecal valve but it had not caused any very serious disturbance during all these years. The intestinal juices had corroded off one blade. The appendix was 22 cm. long, and it was not until after this had been removed that he felt the point of the forceps in the bowel.

The Campaign Against Tuberculosis.—Armaingaud recalls that in 1882 he pointed out the magnificent results obtained in combating tuberculosis by the thirty years of work at the Berck seashore hospital and urged the foundation of little Bercks all along the sea coast, so that in a few years there were seventeen seashore sanatoriums in France. In 1891 he founded the Ligue française contre la tuberculose and in 1899 he founded at Paris twenty courses of lectures on *hygiène antituberculeuse*, one in each ward, each course consisting of eight lessons. It was not until 1894 that Germany roused to undertake similar work. He adds that the German sanatorium statistics include large numbers of persons who had merely nontuberculous bronchitis, etc. He ascertained this in 1902 when he visited a number of German sanatoriums. He adds further that the official statistics for the tuberculosis mortality in Prussia during the seven years, 1886-1892—just before the sanatoriums had been founded—showed a decline of 28 per cent., while during the following seven years the decline was only 23 per cent. He presents evidence further to the effect that an important element in the sanatorium propaganda in Germany was a scheme to sell sanatorium supplies, furniture and equipment generally to other countries.

Operative Treatment for Recurring Hematemesis.—Cazin reports the case of a man of 51 who had had three severe hemorrhages from the stomach during the night after a nervous shock. Nothing but a minute erosion was found near the cardia and a group of clots elsewhere. Each point was sutured together with an over-and-over catgut suture through the mucosa, and smooth recovery followed. In three other cases the hematemesis came on as the first sign of trouble from the stomach. In one, five minute, bleeding ulcerations were found grouped together on an area about 5 by 13 mm. He arrested the bleeding in the same way by a transmucosa catgut suture, suturing the stomach with silk. In another case a severe hematemesis recurred three times with a few days' interval. A bleeding point was found in a small bunch, a Brunnerian adenoma, 4 or 5 mm. in diameter, which he resected. Recovery was uneventful and the young man served afterward all through the war. The outcome has been equally satisfactory in the other cases after these simple interventions. It confirms Dieulafoy's statement that with recurring hematemesis, with menacing symptoms, an operation must be done at once as such interventions are practically harmless.

Journal de Médecine de Bordeaux

July 25, 1919, **90**, No. 14

Aviators' Sickness. R. Cruchet and R. Moulinier.—p. 279.
The Oscillometer plus Auscultation in Study of the Circulation. H. Delaunay.—p. 282.
Postoperative Treatment of Thoracotomy for Empyema. H. Schultz de Brun—p. 291.

Journal d'Urologie, Paris

July, 1919, **8**, No. 1-2

*Nephrostomy. G. Marion.—p. 1.
*Catheterization of the Ureters. E. Pirondini.—p. 13.
Perineotomy for Prostate-Urethra Calculus; Recovery. Farnarier and others.—p. 15.
Hematonephrosis after War Wound. J. Murard.—p. 19.
*Genital Tuberculosis After Unilateral Castration. A. Chalier.—p. 25.
Scrap of Shrapnel in Bladder for Two Years. Girard.—p. 29.
Microscopy in Urologic Practice. M. Vivier.—p. 33.
*Section of Kidney Pedicle. G. Marion.—p. 43.

Improved Technic for Nephrostomy.—When the kidney has to be long drained or the urine permanently diverted from it, Marion works a Tripier dilator into the kidney down into

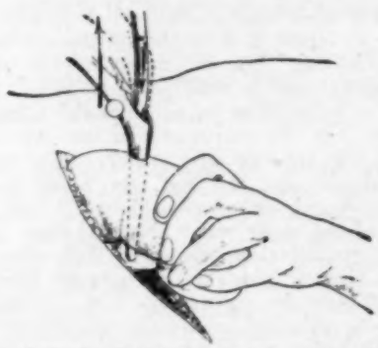


Fig. 1.—The drain is slipped through the dilator into the pelvis and held there as the dilator is withdrawn.

Fig. 2.—The right-angled drain with disk for holding the drain firmly in place.

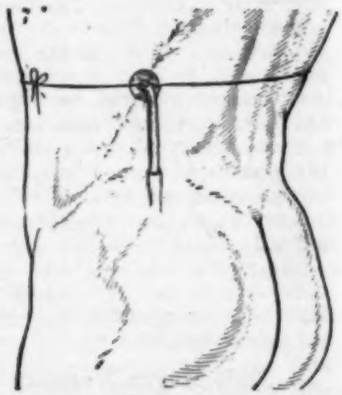


Fig. 3.—The drain in place. A rubber bag fits over the lower end for the urinal.

the kidney pelvis. The 1 cm. incision for the purpose is made at the lower third of the external aspect of the kidney, and the dilator is pushed in until it can be felt in the well exposed kidney pelvis, freed from adipose tissue. The branches are then spread and a right-angled drain is pushed down through it into the kidney pelvis and fastened with a catgut stitch to the capsule. The whole procedure is complete in a few seconds (*je ne dis minutes*), and works perfectly. One of his patients has been wearing a drain of this kind for eight years, leading an otherwise normal life, and no one suspects that he wears a urinal as the fact that the drain reaches into the pelvis prevents seeping of urine. Another patient has worn the drain twelve years. He is not incommoded by his drain. He rinses out the pelvis every morning and sometimes changes the drain himself. Both of these men had had the other kidney removed long before

and calculi kept forming in the remaining kidney until it was drained. If the nephrostomy is done to isolate the kidney from a tuberculous bladder, the ureter should be severed. Nephrostomy without drainage is absolutely bad, he declares.

Correction of Error with Catheterization of Ureters.—Pirondini gives some mathematical formulas for this purpose.

Excision of Tuberculous Epididymis and Vas Deferens.—In Chalier's case the tuberculous right testicle and epididymis had been resected seven years before he excised the epididymis and the vas deferens on the other side, up into the iliac portion of the canal. There has been no recurrence since.

Escape of Kidney Pedicle.—When the ligature or clamp slips and the pedicle slips back while the blood pours from the vessels in it, Marion protests against trying to seize it with forceps. All that is necessary is to tampon hard, piling up the compresses, and then wait four or five minutes. When the tampon is then removed either there is not a drop of blood or merely a slight jet, easily controlled.

Lyon Médical

June, 1919, **128,** No. 6

Recent Legislation on Poisonous Substances. B. Lyonnet and R. Boulud.—p. 273.
*Dysentery and Edema. J. F. Martin and A. Debard.—p. 281. Conc'n.
*Pathogenesis of Fever. Widmann.—p. 286. Cont'n.

Dysentery and Edema.—Martin and Debard report five cases of dysentery with ascites, effusions in joints or edema in the legs, all without any signs of nephritis. All but one young man were about 40 years old, and the edema appeared during convalescence. It lasted from one to ten weeks. Only four other recent cases have been published, but older writers mentioned dropsy as comparatively common with dysentery. In the five cases described here, the edema was accompanied by polyuria and the urine contained large amounts of chlorids, from 23 to 36 gm. instead of the normal average of 10 or 12 gm. The salt content of the blood was low, from 5.38 to 5.96 per thousand, instead of the normal 6.75.

Pathogenesis of Fever.—Widmann here presents further evidence to sustain his conception of the origin of fever. It was recently described in these columns, July 19, p. 231.

Nourrisson, Paris

July, 1919, **7,** No. 4

*Congenital Debility and Atrophy. Lesage and Kouriansky.—p. 193.
*Treatment of Habitual Vomiting. A. B. Marfan.—p. 203.
*Browning the Infant's Food. M. Forest.—p. 217.

Congenital Debility and Atrophy.—Lesage and Kouriansky found that congenital atrophy was due to inherited syphilis in 25 to 35 per cent. of the cases; the Wassermann reaction was positive in this group. In about 50 per cent. there was no Wassermann reaction and an inherited taint from tuberculosis or physical exhaustion of the family or acquired infection was responsible for the atrophy. The atrophy in these two groups is accompanied with transient muscular spasms, but alcoholism is the inherited causal factor with tenacious and persisting spastic atrophy, with negative Wassermann. When syphilis is a factor they give neo-arsphenamin every eighth day, only very slowly increasing the dose from 0.0025 to a maximum of 0.01 gm. After six or seven injections, they suspend it for two months and commence a new series. These small doses can be begun at once after birth, but they should be stopped in case of fever. They reiterate that this technic is the best treatment for latent syphilis in young infants. When there are visible lesions the promptness with which they subside confirms the efficacy of this treatment. The vein at the elbow usually served but, exceptionally, they made the injection in the superior longitudinal sinus. The infant on the day of the injection is fed only with sweetened boiled water. Mercury has not proved satisfactory for treatment of young infants, they say, *Il expose à bien des mécomptes.* The same can be said of neo-arsphenamin when given in such large doses as 0.01 gm. per kilogram, such as Blechmann advocates.

Habitual Vomiting in Infants.—Marfan remarks that when syphilis is a factor in habitual vomiting the infants seem to tolerate mercury lactate by the mouth better than other preparations of mercury. In any event, the child must be fed in spite of his vomiting. Complete and protracted deprivation of food may aggravate the tendency to vomit. The essential point in treatment is to get the child fed, rather than to check the vomiting. If breast milk is absolutely unattainable, asses' milk is the next choice, and next to this, skimmed cow's milk. It is the butter in milk that causes the most disturbance. These infants bear sugar well, and addition of 10 per cent. sugar to skim milk adds materially to its nourishing power. Kefir and buttermilk may answer, but generally they are too acid. He uses them only when diluted with one third water and one third (officinal) lime water. If the infant is 3 months old, he adds a thin gruel with or without maltose; over 6 months a little thicker gruel or *bouillon de légumes,* with increasing proportions of milk. The stomach does not seem to be able to expel these semi-fluid substances so readily.

When the condition is serious, the infant tolerates better very small feedings at short intervals. He begins with a 2 months babe with restriction to one or two teaspoonfuls of ice water every half hour. Half a day of this rests the stomach completely. Then he begins to feed with a spoon breast milk or whatever food is to be used, not allowing the child to suck as this is liable to arouse the vomiting reflex. All the food should be ice cold, and he gives a teaspoonful every fifteen minutes. If during six hours any of this is retained, he gives two and then three teaspoonfuls every half hour for six hours, and the last quarter of the day gives four or five teaspoonfuls and lets the child sleep unmolested for six or seven hours. The amounts are gradually increased, the intervals lengthened and breast feeding is resumed according to the child's tolerance. By following this plan, the child may still vomit occasionally but enough of the food is retained so that the weight shows gains.

If the vomiting persists in spite of this care, he feeds the child with a medicine dropper, giving the food by drops in the child's mouth every three or four minutes. A thickish rice gruel may be used at one feeding if the child is over 5 months old. He describes other means to vary the feedings, and outlines Hess' method of duodenal feeding, mentioning also Fredet's success in feeding breast milk by the rectum. The underlying nervous excitability must not be neglected, and the bottle should be held almost vertically, instead of horizontal, to prevent swallowing of air. After feeding, the infant's trunk should be held vertical a few minutes to favor expulsion of some of the air swallowed. Hot enemas (40 or 45 C., 104-113 F.) help in combating vomiting, from 120 gm. at 3 months to 200 gm. at 6 months twice a day from the first and later once in two days. Bismuth may be useful, given before feeding to form a protective coating in the stomach, a teaspoonful of a mixture of 2 gm. bismuth subnitrate in 45 c.c. each gum mixture and syrup of poppies. Or 0.25 gm. bismuth subnitrate may be added to the bottle. Hot compresses (55 C., 131 F.) applied to the stomach and abdomen, renewed every hour for five or six hours, may be indicated in the graver cases. Twice a day the child can be put in a hot bath (38 C., 100.4 F.) for ten minutes. Still another measure, if all else fails, is a kind of gentle massage of the abdomen twice a day for five minutes, the hand greased with camphorated oil of chamomile. In these extreme cases, sedatives are called for, and tincture of belladonna is better than opium preparations. The latter do not give good results. He adds to the belladonna some bromid, which reenforces its action, and some sodium bicarbonate as hyperacidity is frequent in these extreme cases and as the bicarbonate has also an anesthetic action. He describes further the technic for lavage of the stomach; this sometimes aids but he warns that in certain conditions it may bring on convulsions.

Browned Flour and Milk.—Forest reports four cases in which *lait au roux* seemed to offer peculiar advantages in feeding the infant. In five other infants it was a failure. It is made by heating 7 per cent. butter and 7 per cent. flour over a gentle flame and diluting with water containing 5 per cent. sugar. Then a third or two fifths of boiled milk is added. Heating the butter seems to dispel the volatile fat

acids which are regarded as injurious for the digestive tract. The four infants that thrived on it not only gained in weight but the stools were more numerous and bulkier than with any other method of artificial feeding. There is no starch in the stools and the increased bulk is the result of the stimulation of the digestive secretions by the "browned milk." Hence its special field is for infants with hypotrophy and atrophy but no gastro-enteritis.

Paris Médical

July 5, 1919, **9**, No. 27

*Angina Pectoris and Syphilis. O. Josué.—p. 1.
*Instability of Heart and Temperature. C. Laubry.—p. 4.
*Influenzal Phlebitis. P. Lereboullet and J. Hutinel.—p. 7.
*Cardiac Murmurs. C. Esmein.—p. 9.
*Vertigo in Aortic Insufficiency. J. Heitz.—p. 14.
*Heart-Suprarenal Convulsions. C. Aubertin.—p. 18.
*The Sign of the Dragging Apex. J. Jomier.—p. 20.
The Arterial Tension in Influenza. L. Tixier.—p. 22.

Angina Pectoris and Syphilis.—Josué has been applying the Wassermann test to persons who have had true angina pectoris, but he obtained a positive response only in 33 per cent. These negative findings were contradicted, however, by the success of treatment as for syphilis. There were no further attacks after specific treatment in 90 per cent. of his nine cases. In a few there was slight return of the pains later, but they subsided anew on resumption of treatment. Arsphenamin does not answer; it may bring on serious disturbances with aortic lesions. He obtained the best results with mercurial treatment in minute doses, alternate days, a series of fifteen. This is a vigorous and yet cautious treatment. Josué declares that angina pectoris seems thus to be an almost certain sign of syphilis even in the entire absence of other stigmata of inherited or acquired syphilis. Several convincing cases are reported.

Unstable Heart and Temperature.—Laubry has found that when the heart rhythm keeps normal but grows faster or slower under ordinary stimuli, the temperature fluctuates likewise. Some men presented at times a temperature 1 or 2 degrees higher late in the day than in the morning. Prolonged repose brings it down but not quite to normal. In others there was subnormal temperature in the morning, with a rise of 2 degrees by evening, sometimes. Some of the subjects with this *instabilité thermique* have been under observation for over a year but nothing pathologic to explain this instability has been encountered at any time beyond the unstable balance in the nervous and circulatory system. It may modify decidedly the temperature curve during an intercurrent infectious disease.

Phlebitis from Influenza.—Lereboullet and Hutinel report ten cases from their experience during the recent pandemic in which influenza was followed by phlebitis. It was bilateral in some, and the course was mild.

Interpretation of Heart Murmurs.—Esmein regards the French method of examination for heart murmurs as far superior to the British for various reasons which he explains. It consists in thorough auscultation supplemented by compression of the eyeball. This latter reenforces organic murmurs and weakens or abolishes the inorganic. Radioscopy supplies further evidence when needed. The British accept as organic every diastolic murmur, while the systolic is assumed to have no significance, but this is not accurate.

Dizziness with Insufficiency of the Aorta.—Heitz explains that the dizziness is not actual vertigo, but merely a sensation of emptiness or heaviness in the head which compels a person to sit down to avoid falling. It is evidently due to some disturbance in the circulation in the brain.

Convulsions with High Blood Pressure Without Nephritis.—Aubertin describes the case of a woman of 40 with high blood pressure, hypertrophy of the left ventricle, hyperplasia of the suprarenals, and convulsions, and yet the kidneys seemed to be practically normal. There was aortic insufficiency in this case, but in a second similar case the only assumption seems to be a primary hypertension.

The Lagging Apex Beat.—Jomier comments on the frequent coexistence of valvular disease when the apex beats sluggishly.

Progrès Médical, Paris

June 14, 1919, **34**, No. 24

*Laboratory Findings Compared with Clinical Course in Tuberculosis Suspects. C. Roubier.—p. 229.
Spa Treatment of Organic Nervous Disease. M. de Lépinay.—p. 235.

Tuberculosis Suspects.—Roubier reviews his experience with his last series of 1,000 tuberculosis suspects. With an actual tuberculous lesion at the apex, the clinical and the roentgen findings harmonized in 90 per cent. but the roentgen rays always revealed more extensive lesions than would be surmised otherwise. In some of the others, bronchitis masked the pulmonary lesion but there were four men with no moist râles, no symptoms of condensation and no crepitation after coughing, and repeated examination failed to reveal any physical signs of a tuberculous lesion, but the roentgen rays showed extensive infiltration and tubercle bacilli were found in the sputum. Atypical cases of this kind formed 4.5 per cent. of the men with positive sputum, and they impose the necessity for raying all suspects even when daily percussion and auscultation give negative findings. In five other cases roentgenoscopy showed persistently normal findings, but tubercle bacilli were found in the sputum in some of them after expectoration had been induced with iodid. Rist declares that when nothing abnormal can be seen on the screen or roentgenogram, the lung is unquestionably normal. Roubier adds that in these cases he had to content himself with roentgenoscopy alone; it is possible that in an instantaneous roentgenogram something abnormal might have been detected. In 1.6 per cent. of the cases with positive sputum, both clinical and radiologic findings were so slight as to be only dubiously perceptible. He discusses further the cases with lesions at the base or middle of the lung, and the 307 with chronic bronchitis or permanent impediment to breathing through the nose which had caused the mistaken diagnosis of tuberculosis. This group included further seventeen cases with syphilitic or malignant lesions in the lung or an abscess or interlobar empyema, or else the men (201 cases) were merely narrow chested and suffering from exhaustion, dyspepsia or heart disease. Thus in over 50 per cent. of the 1,000 men the suspicion of tuberculosis proved to be unfounded.

Revue Médicale de la Suisse Romande, Geneva

April, 1919, **39**, No. 4

Forms of Tetanus Observed During the War. C. Carnioley.—p. 158.
Infectious Delirium in Course of Influenza. A. Schlesinger.—p. 167.
*Feeding through Catheter for Infants with Lesions in Mouth, Nose or Pharynx. Kotzareff.—p. 174.
*Intestinal Obstruction from Ascarides. Id.—p. 176.
Contagion from Supposed Healed Chancre. P. Narbel.—p. 181.

Feeding Infants through a Catheter.—Kotzareff gives an illustration of the funnel and catheter with interposed tube, Murphy cock and glass cannula, which he uses to feed infants when conditions in nose, mouth or throat prevent normal feeding. He takes about ten or fifteen minutes to feed a very young infant in this way, imitating the drop method of proctoclysis.

Ascarides Induce Ileus.—In Kotzareff's two cases the women of 40 and 60 had never shown any symptoms of ileus or helminthiasis. Acute ileus compelled an operation, and it disclosed that in both there had been partial occlusion from membranous bands. This occlusion had suddenly become complete from obstruction by ascarides.

Revue Neurologique, Paris

January, 1919, **26**, No. 1

*Disturbance in Sense of Space. P. Marie and P. Béhague.—p. 3.
*Herpes Zoster of the Face. J. A. Sicard, H. Roger and A. Vernet.—p. 15.
*Familial Exophthalmic Goiter. Souques and J. Lermoyez.—p. 20.
The Lhermitte Technic for Staining Neuroglia. A. L. Skoog (Kansas City).—p. 26.
Case of Oneirism and Secondary Delirium of Persecution in Alcoholic Degenerate. L. Babonneix and M. Brissot.—p. 30.
Localizations in the Brain According to Monakow. P. Ladame.—p. 32.

Disorientation in Space After Wound of Frontal Lobe.—Marie and Béhague remark that the war wounds have thrown much light on the functions of the frontal lobe. Deep lesions in particular of the prefrontal region seem to have entailed

disturbance in the sense of space in the absence of any objective sign of injury of the nervous or vestibular system. There is no or very slight tendency to headache, dizziness or temporary dimness of vision. The disturbance in orientation is solely in the sense of direction while the idea of time seems to be normal. The various forms of this disturbance are discussed with a few illustrative cases, the details of twelve being tabulated for comparison.

Herpes Zoster of the Face.—The propagation of the herpes to the sympathetic system, ganglions and connected fibrils is described as studied on various cases before and during the war.

Inherited and Familial Exophthalmic Goiter.—Souques and Lermoyez relate that in the family described there have been seven cases of exophthalmic goiter among the sixteen members of the family in three generations. They give illustrations of the four members they have personally examined. The tendency seemed to be transmitted by the males. There were no signs of inherited syphilis; the trouble must be some inherited predisposition rendering the thyroid peculiarly susceptible to diverse infections and intoxications. They list the few similar familial cases on record. In one, dating from 1884, eleven of the sixteen members of the family had developed exophthalmic goiter.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 10, 1919, **49**, No. 28

*Obstetric Examination. E. Jegge.—p. 1033.
Influenza and its Mental Complications. C. Ladame.—p. 1050.

Obstetric Examination.—Jegge remarks that notwithstanding rubber gloves and all precautions, the morbidity of the puerperium still ranges from 5 to 20 per cent. He ascribes this to the woman's own germs, saying that it is absolutely impossible to ensure asepsis of the vagina. He tabulates the findings with 500 parturients examined internally with every precaution and 500 in which no attempt at internal examition was made. These figures include only spontaneous deliveries and no cases of laceration of the perineum. The morbidity was much higher in the internal group and also in the primiparae in both groups. His figures and experiences converted him to the necessity for refraining from internal examination, and he says that he has accomplished very nearly as much without it. He soon learned to tell by palpation from without whether the head was presenting or not, and how far down it had got and its position. With the hand on the perineum of the woman lying on her side, the palm on the lowest segment of the sacrum, the finger tips between the coccyx and anus, slowly pressing inward and upward during an interval between labor contractions, and then giving an abrupt rapid pressure, the hard head can be palpated if it is in the pelvic cavity or pelvic outlet. If the head with its longest diameter has not yet entered the small pelvis, then the findings with this back-of-the-perineum maneuver are negative. If a muscle interferes with it, telling the patient to strain gets this out of the way. This maneuver is particularly useful when palpation from the front is impossible on account of obesity or painfulness. It gave the desired information in nearly 95 per cent. of his cases.

The degree of dilation of the os can be ascertained by way of the rectum almost as well as through the vagina. This is not painful and occasions at the most an unpleasant sensation of pressure. It has a special advantage if cesarean section becomes necessary, but it does not inform in regard to the diameter of the external os. This can be ascertained very readily by palpation of the contraction ring, the wall-like ridge where the thick nonelastic wall of the body of the uterus joins the elastic zone of the cervix. This passive, thin, lower part of the uterus forms an elastic tube, as it were. As this tube stretches, the circular ridge at its upper limit is pushed up, and this pushing up of the contraction ring can be followed with the palpating hand. The height of the ring is thus an index of the increasing diameter of the os. When the os is fully dilated, the distance from the external os to the contraction ring is 10 or 11 cm. This brings 8 or 9 cm. of the distance above the upper margin of the symphysis; this is about equal to four fingerbreadths. At three fingerbreadths the os is as wide as the palm; at four fingerbreadths, the os is fully dilated. If the contraction ring cannot be palpated at all, the os can be assumed to be not wider than a 5 franc piece. Jegge's experiences with this method confirmed its instructiveness and reliability in 91 per cent. of the 100 cases tested. It failed in 4 per cent.; in 5 per cent. various causes conspired to prevent a correct result. By these different means of external examination it is possible to dispense with vaginal examination in very nearly every case. In any event they should precede the latter except possibly when indications call for rapid termination of delivery or anomalies require special measures or the findings with external examination are too vague. In conclusion he reiterates that physicians and midwives fail to realize the responsibility they incur with internal examination, especially with contracted pelvis and placenta praevia which may demand cesarean section. It is never indifferent, and is often directly dangerous even with every possible precaution by experts.

Pediatria, Naples

July, 1919, **27**, No. 7

*Preleukemic States in Children. C. Martelli.—p. 385.
*The Initial Phase of Scurvy. O. Cozzolino.—p. 407.
*Nodose Erythema. C. Pestalozza.—p. 435.

Preleukemic States in Children.—Martelli applies this term to a condition in which the blood is of the leukemic type in children with some inherited taint and constitutional predisposition to anomalies in the thymus and lymphatic system. He has long made a special study of blood diseases, and has come to the conclusion that leukemia, lymphosarcoma, etc., are preagonal states; the organism exhausted by its cytotoxic struggle has yielded to the action of the pathogenic causes that have been undermining it. By keeping oversight of changes in the blood, we can see when this cytotoxic struggle is going on, and when collapse is impending, so that by prompt measures we may be able to ward it off, combating the underlying syphilis, tuberculosis, malaria or sepsis. He describes seven cases in detail with the necropsy findings in some, and declares that this preleukemic state is peculiarly liable to develop early in life. The metaplasia of the blood-producing tissues may be the unsuspected fatal factor in many cases of anemia, enteritis, hemorrhagic diathesis, malaria, syphilis, tuberculosis, etc. In forty-five cases of leukemia he found tuberculosis in thirteen; syphilis in seven; malaria in five, streptococcus or staphylococcus sepsis in four each, and various bacterial associations in ten. By vigorously combating the primary disease, the tendency to the preleukemia may be arrested, and he suggests that it might be possible to arrest the tendency to metaplasia of the blood-producing organs by roentgen treatment as for established leukemia. He has no facilities for this himself, but hopes that others will give it a trial. There is no doubt that the preleukemia stage, which reveals the toxic metaplastic irritation of the blood-producing organs, can be checked and conquered if the physician examines the blood and gives the proper treatment when he notes intense pallor, unjustified hemorrhages, enlargement of glands and spleen without any apparent infection to explain them.

Scurvy in Infants.—Cozzolino refers to the initial phase, the vague abortive type in particular which occurs in infants the same as in adults, and often escapes detection unless the gums are examined as a routine measure. In the eight cases described of this initial type, the infants were from 12 to 26 months old, and all but two were boys. He compares the literature on the subject from various countries. In forty-seven out of ninety cases published from Parma, the parents were poor, while in other countries the well-to-do classes seem predominantly affected.

Erythema Nodosa.—Pestalozza calls attention to the fact that tuberculosis was beyond question in the seven cases described of erythema nodosa in children.

Riforma Medica, Naples

June 28, 1919, **35**, No. 26

*Tumor in Esophagus Simulates Aneurysm. A. Litvak.—p. 518.
*The Kidney as an Organ for Hemolysis. T. Silvestri.—p. 523.
Autoserotherapy in Pleurisy with Effusion. E. Mello.—p. 525.
Intestinal Flora in Relation to Surgery. E. Aievoli.—p. 527.

Tumor in Esophagus.—Litvak remarks that a tumor may be long developing in the esophagus without causing the slightest symptoms. Then, when it reaches a certain size or a larger lump of food is passing it, serious pain and difficulty in swallowing develop suddenly. The pain and dysphagia may then temporarily subside if the tumor softens, or they may progress. The pains may deceptively resemble those with aneurysm of the aorta. He calls attention in particular to pain in the back and left side of the neck, its tenacity and intensity and the exacerbation when the neck is stretched, while the pain is relieved by bending the neck. The trachea may be pushed aside with either tumor or aneurysm, and adhesion to the aorta may permit transmission of the aortic pulse to the trachea, as may occur with aneurysm. In a case reported the tumor protruded both into the lumen and outside, and had induced recurrent paralysis.

The Kidney and Hemolysis.—In this preliminary note, Silvestri reports further research which seems to confirm his previous statements in regard to the destructive action on kidney tissue and also on the blood of pathologic kidney tissue injected into the peritoneum of animals. Scraps of other organs injected in the same way have a similar destructive action on kidney tissue but not on the blood; the hemolytic action seemed to be peculiar to kidney tissue in such experiments. He has had under supervision for years several cases of paroxysmal hemoglobinuria, and in three he has never been able to detect hemoglobinemia but each in this group has chronically pathologic kidneys with a history of nephritis from five to nine years before.

Rivista di Clinica Pediatrica, Florence

April, 1919, **17**, No. 4

*Latent Tuberculosis in Nurslings. L. M. Spolverini.—p. 169.
*Infant Feeding in Italian Manual, 1552. A. Spallicci.—p. 187.

Latent Tuberculosis in Infants.—Spolverini has applied tuberculin skin tests to 900 supposedly nontuberculous children under 1 year old, and obtained a positive response in 63. This is 7 per cent. in all, but only in 0.80 per cent. of the 8 infants 3 or 4 months old; 2.44 per cent. of the 22 from 4 to 6 months old, and 3.66 per cent. of the 33 from 6 to 12 months old. The predisposing causes in the infants and in the parents and environment are tabulated, with the pathologic findings in the infants. Radioscopy showed that the glands at the right hilum were affected more often than the left; those at the left hilum do not show unless they are of considerable size, being concealed by other shadows. These glandular lesions could be detected only by raying. From the clinical point of view the tracheobronchial glands are the first manifest localization of the disease. His table reemphasizes that familial contagion is the most dangerous factor, and that in the cities search should be made for infants born into an infected environment and they should be taken away, into the country, with close medical surveillance.

Early Pediatrics in Italy.—Spallicci quotes freely from a work published by Mercuriale in 1552, with the title "Nomothelasmus," dealing with the feeding and training of infants and young children. It shows, he adds, that pediatrics in Italy was born from enlightened common sense.

Archivos Españoles de Pediatría, Madrid

April, 1919, **3**, No. 4

*Anomalous Forms of Tuberculous Meningitis. C. Juarros.—p. 193.
*Operative Treatment of Spastic Paralysis. M. B. Ansart.—p. 202.
*Epinephrin in Treatment of Rachitis. F. Corominas.—p. 215.
Adenoid Vegetations in the Etiology of Tuberculosis. A. Martin Calderin.—p. 225.

Anomalous Forms of Tuberculous Meningitis.—Juarros describes the various types as fulminating, latent, protracted, and those which begin with symptoms suggesting an ordinary infectious disease. There may also be anomalous predominance of one or more symptoms, and the disease may affect certain regions exclusively and may induce clinical pictures simulating chorea, Little's disease, intoxication and poliomyelitis. The disease may also prove misleading on account of the absence of the usual symptoms.

Operative Treatment of Spastic Paralysis.—Ansart refers to Stoffel's operation which after a brief vogue seems to be now discarded by surgeons in Spain. But he insists that this operation is the preferable intervention with spastic paralysis, basing his statements on four cases in his own experience and on the physiology of nerves (Cajal), as well as on extensive experiments on dogs. His experience and reasoning further teach that an operation on the tendons should supplement the Stoffel operation when the contracture has reached a certain stage.

Epinephrin in Rachitis.—Corominas ascribes to endocrine insufficiency an important share in the production of rachitis, and declares that epinephrin is indicated to whip up the endocrine system.

Crónica Médico-Quirúrgica, Havana

March, 1919, **45**, No. 3

*Conjunctivitis of the Fornix. J. Santos Fernández.—p. 83.
Technic for Dacryocystectomy. M. V. Escolano Sabater.—p. 96.

Conjunctivitis of the Culdesac.—Santos Fernández gives an illustration to show how infiltration and swelling of the conjunctiva between the tarsal portion and the bulbar portion can be detected by everting the lid. The conjunctivitis then shows as a red and swollen line along the lower edge of the fold made by the everted lid. Pus can accumulate in this culdesac and escape local treatment. It has sometimes been mistaken for trachoma. The process in the culdesac is not actual inflammation but the infiltration feels like a foreign body, and keeps up an irritation of the nerves that sets up a reflex winking and twitching of the eyelids. This is so characteristic that the conjunctival culdesac should always be examined when a tendency to abnormal contraction of the eyelids is noted. The patients have always been boys in his experience. Local treatment is that for any mild conjunctivitis, but as the subjects are usually of the lymphatic constitution, general hygiene is particularly important in such cases, and a change to seashore or mountains. The affection is not contagious, but the subjects are peculiarly susceptible to infection and hence should be guarded with special care against infection of all kinds.

Gaceta Médica de Caracas

June 15, 1919, **26**, No. 11

*Chagas' Trypanosomiasis in Venezuela. E. Tejera.—p. 113; Pino Pou.—p. 113.
Appendicular Dyspepsia. L. Razetti.—p. 114.
*Perforation of Intestine in Typhoid. A. d'Empaire.—p. 116.

American Trypanosomiasis in Venezuela.—Tejera and Pino Pou each describe a case of Chagas' disease in Venezuela, and report the finding of *Trypanosoma cruzi* in the insects, *Rhodnius prolixus*.

Typhoid Perforation.—D'Empaire relates that the perforation occurred at the ninth day of typhoid in his little daughter of 7. There had been profuse diarrhea during the disease. A large perforation was found in the ileum and a patch nearby seemed on the point of perforating, but as this intestine seemed in good condition otherwise, these two regions were sutured. In this and in three other operative cases the median laparotomy gave ample oversight.

Revista Médica Cubana, Havana

February, 1919, **30**, No. 2

Roentgen Diagnosis of Gastric Ulcer. A. Inclán.—p. 55.
*Ichthyol Internally in Urticaria. L. Espín.—p. 65.
*Differential Diagnosis of Tumor in Mediastinum. F. Suárez.—p. 68.
Cardiac Forms of Influenza. R. Grau y San Martín.—p. 73.

Ichthyol Internally in Urticaria.—Espín reports six cases in adults and children in which marked improvement followed internal administration of ichthyol. In the first case the colored man had been tormented for nine months with intense itching, only briefly relieved by any measures. The itching was most severe in the palms and soles. It had begun eighteen months before, and of late it had become so intense that the man was unable to sleep. Espín gave him a pill of 0.25 gm. ichthyol and 0.10 gm. magnesium carbonate.

He fell quietly asleep forty-eight hours later, and has had no signs of the urticaria during the year and a half since. In a case of urticaria following the eating of fish, the cure was not complete until ten days after the ichthyol had been begun. Others were cured in one or three days. The dose was reduced for a child of 9 to 0.15 gm. of the ichthyol and 0.05 of the magnesium carbonate. Espin does not attempt to explain the action of the ichthyol in these cases but his success in the otherwise rebellious cases speaks for itself.

Tumor in Mediastinum.—In Suárez' case there had been intermittent periods of difficulty in breathing and in swallowing for nearly four years, and they had been growing more frequent and severe and the dyspnea finally interfered with sleep. The trachea was pushed toward the right and a small tumor could be palpated in the right supraclavicular triangle, but the veins and glands in the region seemed normal and the assumption of a benign tumor was confirmed by the successful operation. There was nothing to suggest syphilis or alcoholism. In conclusion Suárez reviews the various sets of symptoms induced by tumors at different points in the mediastinum.

Siglo Médico, Madrid

May 24, 1919, **66**, No. 3415

*Operative Treatment of Strabismus. B. Castresana.—p. 413. Cont'n.
*Leprosy in Spain. Hernández Sampelayo.—p. 418.

Operative Treatment of Strabismus.—Castresana's technic was described in these columns, Aug. 9, 1919, p. 461.

Leprosy in Spain.—Sampelayo recalls that there have been endemic foci of leprosy in Spain for centuries, but it is also being imported from abroad. The only effectual prophylaxis, he reiterates, is isolation, and provisions for this are urgently needed in the invaded provinces.

Vida Nueva, Havana

April, 1919, **11**, No. 4

*History of Medicine in Cuba. I. Castellanos.—p. 74.
Eye Symptoms of Toxemia of Pregnancy. F. M. Fernández.—p. 76.
Prenatal Care. S. Garcia Marrúz.—p. 79.
Lichens Blighting Olive Trees in Parts of Mexico. A. S. Nuñez.—p. 92.

History of Medicine in Cuba.—Castellanos refers to Trelles' new "Biblioteca Cientifica Cubana" which lists the works of 1,700 Cuban medical writers from the earliest times to date, including the writings of Cubans who, like Albarran, settled in other countries. The first "Manual of Histologic Technic" published in Spanish was San Martin's work in 1888. Cajal's manual did not appear till a year later. The first Pasteur institute on the American continent was founded at Havana in 1887, one of the first in the world for the treatment of rabies.

Mitteilungen a. d. med. Fakultät. d. k. Univ. Tokyo

April 29, 1918, **19**, No. 3. Rec'd June, 1919

*Histologic Research on the Membranous Labyrinth of the Tadpole. T. Asai.—p. 315.
*Distribution of Iodin in Animal Body. K. Fujisawa.—p. 389.

The Labyrinth in the Tadpole.—Asai studied both the toad and the frog tadpole, with special research on the physiologic functions of the terminal nerve epithelium of the pars neglecta of the membranous labyrinth. He offers what he thinks is a satisfactory explanation of this function.

Distribution of Iodin in the Body.—Fujisawa reports extensive clinical and experimental research which has apparently established that organs with a tuberculous focus contain more iodin than others. In tuberculous tissue, the iodin forms an organic compound with fat and lipoid substance but not with albumin. Organs with a suppurating focus, bacterial or aseptic, also contain more iodin than usual, but the iodin in the pus is in the form of an alkaline iodid and not as an organic compound. Cancer tissue also stores up more iodin than ordinary tissues; sarcoma not so much as carcinoma. The largest proportion is in the softened part. Syphilitic tissue takes up more iodin than other organs, and it forms an organic compound with fat and lipoid substance but not with albumin. The iodin in exudates is in the form of an alkali iodid, not forming an organic compound with fat and albumin.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

May 31, 1919, **1**, No. 22

*Dangers of Acetylene Welding. J. P. L. Hulst.—p. 1933.
*Underfeeding and Cerebral Lesions. J. K. A. Wertheim Salomonson.—p. 1941.
Underfeeding of Children. M. van der Hoeve.—p. 1948.
*Tonsillectomy and "Thymus Death." H. Burger.—p. 1951.

Dangers of Acetylene Welding.—Hulst explains that carbon monoxid poisoning was probably responsible for the death the fourth day of the man of 34 who had been welding for half an hour inside a large boiler. Acetylene gas does not contain deadly phosphorus and sulphur gases or nitric acid, and the necropsy findings were negative, including spectroscopic examination of the blood. This does not conflict with the assumption of carbon monoxid poisoning as this gas soon disappears from the blood after it has done its deadly work. Since the man had been given welding work to do he had complained several times of nausea and that he had no appetite, which has often been noted with chronic carbon monoxid poisoning. The blood should be examined at once for carbon monoxid when symptoms develop in a person working with an acetylene gas welder.

Softening of the Brain and Cerebral Hemorrhage.—Salomonson has noticed that since food has been scanty and dear, he has not encountered so many male cases of cerebral hemorrhage as in previous years, but on the other hand, the number of cases of softening of the brain has increased fourfold. The total figures for nearly seven years in his service are forty-six of the latter to thirty-eight of cerebral hemorrhage, but for the first four years the totals were only fourteen to twenty-one. Bread cards were introduced in 1915 and potato cards in May, 1916, and they were soon followed by great restrictions in fat and meat. During the last half of 1918 the ration of food was apparently at the lowest possible figure. There was first a general loss of weight and then a decline in the blood pressure. The pulse rate also declined, dropping to 40 or 50 or even less in the morning. The blood pressure declined to 7 or 8 cm. mercury, and Schlittenhelm has reported a decline to 4 and 5 cm. mercury. A further phenomenon for which Salomonson considers the undernourishment responsible was a weakening of the heart sounds at the base, evidently connected with the low blood pressure. The young and robust had their blood pressure decline the same as the elderly with pathologic vessels. Even with hard, tortuous vessels the pulse was remarkably weak. The circulation was thus below par throughout, and in terminal, more or less pathologic arterioles the circulation might die out completely. This is almost certain to entail arteriothrombosis,and when this occurs in a cerebral artery a focus of softening results. The low pressure and the reduced pumping power of the heart deprive some of the smaller vessels of their full supply of nourishment. Among these the vasa vasorum suffer so that a vicious circle is set up. It is not a casual coincidence that the cases of softening of the brain have grown more numerous while apoplexy is becoming rarer. The prognosis according to his experience is much more favorable with the former than with the latter. Nearly all the cases of encephalomalacia improved notably under medical measures.

Tonsillectomy and Thymus Death.—Burger reports the death of a youth of 15 under chloroform for tonsillectomy. The anesthesia and the operation had proceeded smoothly but immediately after the operation had been concluded, the heart action and respiration stopped. Necropsy showed the thymus more than twice the normal size, and the thymicolymphatic status explained the fatality. This status seems to be particularly dangerous for goiter operations, and judging from Burger's own case and three he has found on record, the same is true of tonsillectomy. Kofler's fatal case was the only fatality in his 6,000 tonsillectomy cases, and Kafemann's in 10,000. In one of the thymus death cases, death did not occur till the following day, after an interval of respiratory disturbance. In all the others death occurred at the close of the operation, before rousing from the anesthetic. Burger adds that there does not seem to be any certain means for detecting the thymicolymphatic status beforehand; aneurysm or retrosternal goiter may simulate a large thymus.

Hospitalstidende, Copenhagen

July 2, 1919, **62**, No. 27

Occurrence of Influenza Bacillus. M. Kristensen.—p. 801. Com'd in No. 26, p. 777.

July 9, 1919, **62**, No. 28

*Wassermann Tests in 1918. T. E. H. Thaysen.—p. 825.

Wassermann Tests.—Thaysen found a positive response in 10.9 per cent. of the men and in 11.7 per cent. of the women among 738 hospital patients tested. In thirty-six cases the positive Wassermann was the only thing that suggested syphilis.

Nordiskt Medicinskt Arkiv, Stockholm

May 15, 1919, **51**, Internal Medicine Section No. 4-5

*Phlegmonous Gastritis. H. Sundberg.—p. 303.
*Symmetrical Gangrene. H. Marcus.—p. 469.

Phlegmonous Gastritis.—Sundberg gives the details of 17 cases from the clinics at Stockholm and Upsala, and tabulates these and others he has found on record—a total of 215 cases of phlegmonous gastritis. His tabulation alone fills 60 pages and his bibliographic references 8 pages. The inflammatory process develops mainly in the submucosa. He says that Hedenius was the first to suggest the infectious origin (1871); streptococci have been demonstrated in 71 of 95 cases examined. In only 8 per cent. of all the cases listed were the patients of the well-to-do class; 25 per cent. of the total number had been hard drinkers. In the 17 personally observed cases, there was always a history of chronic gastritis, and the secretion of gastric juice was abnormally low. The inflamed mucosa is peculiarly vulnerable, and the deficient gastric secretion leaves it defenceless. Infection can occur by direct implantation of germs or by way of the blood. Pus in the vomit is the most instructive sign of the affection, especially when the amount is large and the intervals short. Another instructive sign is that the pains which may come to resemble those of a perforating gastric ulcer subside when the patient sits up after reclining. This was constant in his cases, and the high fever also testified against perforating gastric ulcer. In 33 per cent. of the fatal cases nothing was found to indicate peritonitis. Rational treatment can be only by resection of the diseased portion but spontaneous recoveries are known. Cases in which after an exploratory incision revealing supposedly incurable cancers, the patients survived for years afterward, may have been cases of phlegmonous gastritis on the road to healing. The death rate in his nonoperative series was 92 per cent. Cases in men are nearly three times more numerous than in women. The ages were between 20 and 60. High fever and general malaise, headache and thirst, with vomiting and sometimes violent and persisting hiccup often usher in the disease.

Symmetrical Gangrene.—In Marcus' four cases the Raynaud disease developed as an acute infectious disease of septic nature, and in three of them a tumor was found in the mediastinum or pancreas which evidently interfered with the functioning of the vasomotor nervous system. Reviewing the literature shows the prevalence of symptoms showing disturbance in the sympathetic system, along with symptoms of septic infection, malaise, insomnia, mental haziness. Tumefaction of joints is common, as also eruptions, pain, albuminuria, weak heart, enlargement of spleen, subsidence of the reflexes and tender points suggesting neuritis. The clinical picture thus combines features of both sepsis and rheumatism. There is evidently an inherited predisposition to vasomotor disturbances of the Raynaud type, and they develop under some provocative cause, catching cold, trauma, spinal processes or tumors. Syphilis may be a factor; no comprehensive data have been recorded in this line; in his own cases there was nothing to suggest inherited syphilis except possibly the tumors. He is now engaged on experimental research trying to induce symmetrical gangrene with inoculated infection.

Norsk Magazin for Lægevidenskaben, Christiania

July, 1919, **80**, No. 7

*Aphasia. G. H. Monrad-Krohn.—p. 705.
*Modification of Reflexes after Physical Exertion. Id.—p. 728.
*Social Service for Children at American Hospitals. K. Utheim.—p. 733.
*Neurorecurrence after Arsphenamin Treatment. J. H. Berner.—p. 742.
*The Genius Epidemicus. IV. A. Magelssen.—p. 749.

Aphasia.—Krohn reiterates here the advantages of the method of examining persons with aphasia which he first described in the *Journal of Mental Science* in 1917. This takes into account all the psychosensory and psychomotor functions involved in speech, and thus renders possible a clinical nomenclature of the different forms of aphasia. He gives a critical survey of the various theories on aphasia and the speech center or rather speech region.

Changes in the Reflexes After Physical Exertion.—Krohn tabulates the findings in respect to the knee-jerk in forty-nine men just before and after a ski racing tournament covering a hilly course of 50 km. In all but two the knee-jerk was found afterward decidedly attenuated or abolished altogether. The race took nearly five hours, and the modification in the reflex was evidently a manifestation of fatigue. In ten of the men the response was weaker on the right side than on the left, suggesting that the right side was used more than the left.

Welfare Work for Children in American Hospitals.—Utheim describes the work of the child health organizations, the classes for undernourished children, and other departments of welfare work for children in connection with certain American hospitals.

Neurorecurrence After Arsphenamin Treatment of Syphilis.—Berner reports the case of a young woman who developed headache, vomiting and deafness six months after acquiring syphilis. It had been treated at monthly intervals with five injections of arsphenamin. The Wassermann reaction was positive and the symptoms were those typical of neurorecurrence. They subsided under potassium iodid three times a day for three weeks, and then neo-arsphenamin. He reviews some German and Norwegian literature on neurorecurrence, and remarks that the prognosis should always be drawn with some reserve as although the symptoms may subside, even without treatment, there is usually some defect left in the functioning. The earlier and the more vigorous the treatment the better the outlook.

Influenza and Extremes of Temperature.—Magelssen discusses what he calls the genius epidemicus. He has noticed that certain weather conditions precede epidemics of influenza. This affects masses of people all around the globe, practically simultaneously, and this he thinks explains the pandemics by rendering the people susceptible to disease. A chart showing the epidemics of influenza at Christiania since 1847 and the temperature during these eighty years reveals a close connection between certain weather conditions and the epidemics. In the year preceding the epidemics the winter temperature had been unusually cold, and the following spring had come on suddenly, prematurely warm, and the summer was unusually hot. This abrupt transition from cold to hot may modify the heat regulation in the body in some way, and thus reduce the resisting power to diseases in which the vasomotor tone is low and the vitality and vital functions are depressed. In these characteristics influenza resembles the symptoms which often develop on moving from a temperate to a tropical climate.

His data suggest that the limits between influenza, catarrhal fever and ordinary colds are not very decided, and that the virus is made up of the same familiar germs of old. The susceptibility to the virus and the virus and the intensity of its action are the results of a temporary constitutional weakness which in turn is the result of the action of the temperature. His charts indicate that the weakening of the constitution from this cause makes its influence felt for about three years at least. The practical conclusion follows that in periods of epidemic disease it is wise to refrain from needless exposure to extreme cold or extreme heat and from sudden transitions. One reason perhaps why the young and robust suffered most from influenza was because they exercised so much in military drill, in athletics, in dancing, etc., and were gathered in underheated or overheated rooms. Prolonged diaphoresis and bed rest seem to offer the best prospects in treatment.